

# JUNIOR MECHANICS AND MODEL ★ AIRPLANE NEWS

JANUARY  
1930

*Beginning in this issue*

## SHARKS OF THE AIR

*a thrilling serial of pluck and daring*

by LIEUT. LAIDLAW HAWKER



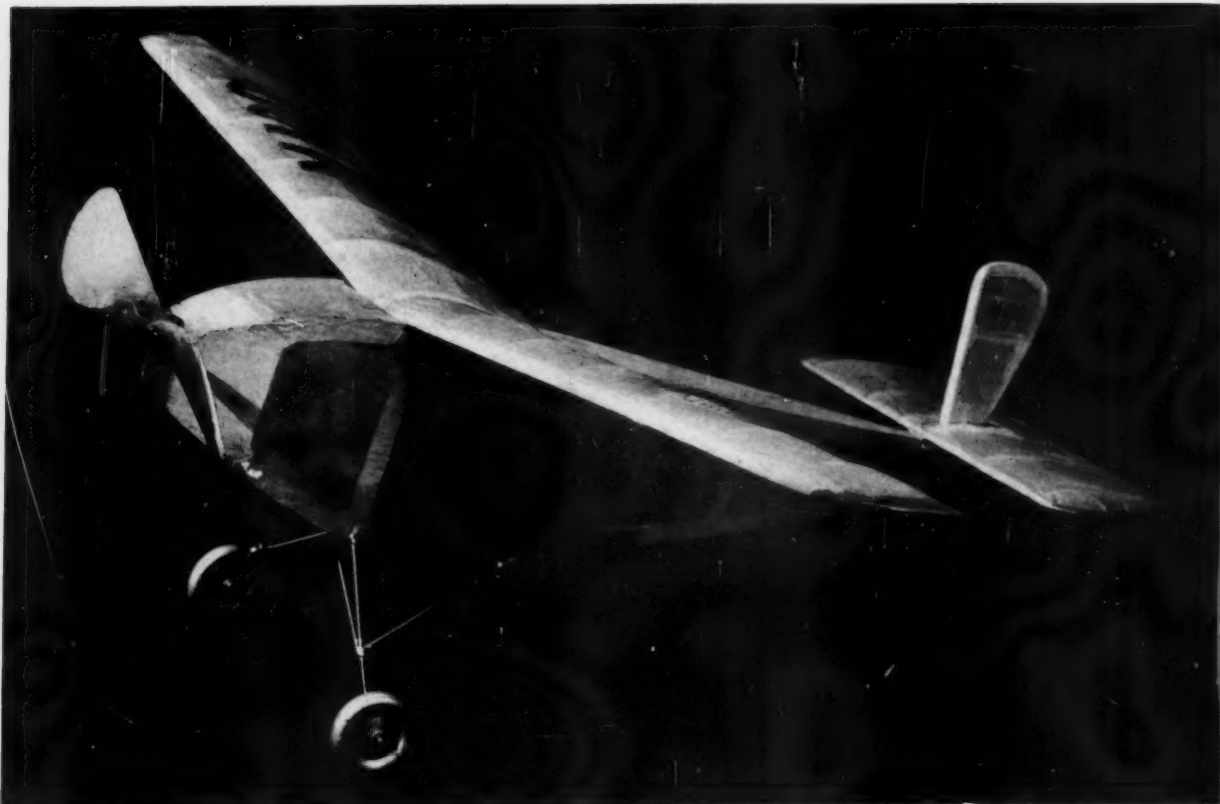
clear  
Olukin

HOW TO BUILD  
PERFECT SCALE  
MODEL OF THE  
PORTISS ROBIN...A J.D. INDOOR BIPLANE

A STIRRING STORY OF UNCLE SAM'S  
SILENT FLYERS...

## THE AIR-GOIN' NAVY

by Lieut. H. B. MILLER



## This Moskito Plane Really Flies

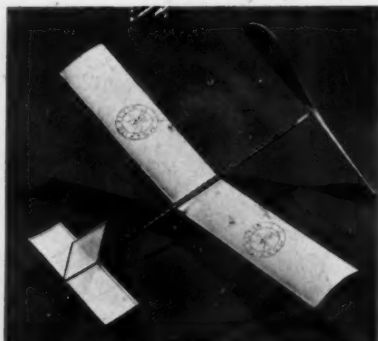
**B**OYS, at last, here's the model you've been looking for. The latest masterpiece of famous Moskito Flying Model Airplanes. Until you've flown this model you don't know the best thrills of the game. This transport cabin model has actually flown 1200 ft. Here is a real chance to study airplane flight. With flying speed of only 7 miles an hour, it remains in the air several minutes. Wing span 36", fuselage 20", weight 3 oz. or less. Kit contains best grade Balsa Wood and has ribs cut ready to use with wing curve tried and proven. Fuselage sides already made and all wood cut to size. Send today for this wonderful model kit.

### Most Complete Kit on Market

12" carved propeller.  
Extra blank propeller with carving instruction sheet.  
2 ozs. of waterproof cement which dries white.  
4 ozs. real airplane dope.  
New type landing gear, shock absorbing and unbreakable. All fittings made and ready to use.  
Full size layout sheet with all details clearly shown. You can't go wrong.

Postpaid  
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### TRANSPORT CABIN MODEL KIT, ONLY

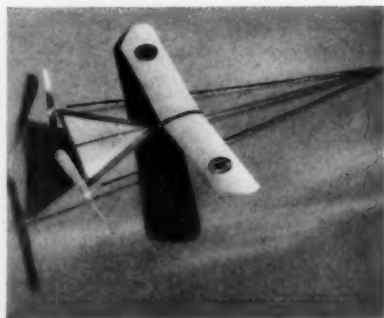


**Moskito Flyer \$1**  
postpaid only

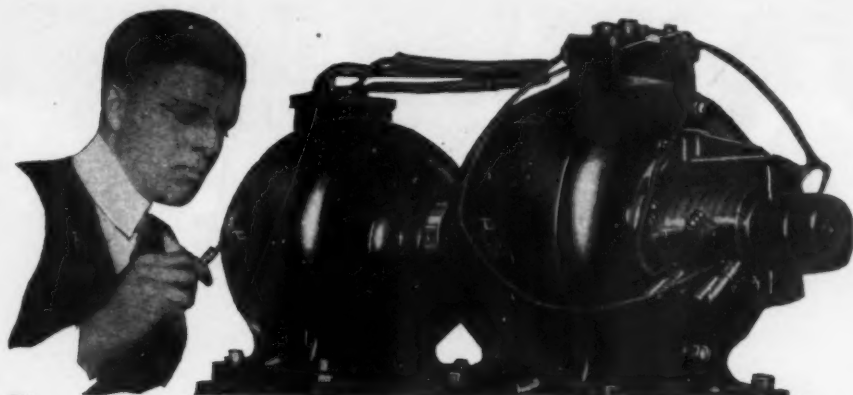
Your model fleet is not complete without these two sensational contest-winning models. Special slow revolving propellers keep them in the air many minutes. All Balsa wood construction. Twin Pusher flies 10 minutes. 30" wing spread; weight 2 3/4 ozs. and can be lightened. Moskito Flyer flies 5 minutes. Most complete kits in market. Motor winders, extra propeller blanks, etc. Full size layout sheet with each set. Baby R. O. G. Flyer, half size of big Moskito sent postpaid for only 50c. Let us send you all three today.

### MOSKITO FLYER AIRPLANE CO.,

11 W. 42nd St., New York



**Twin Pusher \$3**  
postpaid only



# Amazingly Easy Way to get into ELECTRICITY

Don't spend your life waiting for \$5 raises in a dull, hopeless job. Now... and forever... say good-bye to 25 and 35 dollars a week. Let me show you how to qualify for jobs leading to salaries of \$50, \$60 and up, a week, in Electricity—NOT by correspondence, but by an amazing way to teach, RIGHT HERE IN THE GREAT COYNE SHOPS. You become a practical expert in 90 days! Getting into Electricity is far easier than you imagine!

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Lack of experience—age, or advanced education bars no one. I don't care if you don't know an armature from an air brake—I don't expect you to! I don't care if you're 16 years old or 48—it makes no difference! Don't let lack of money stop you. Most of the men at Coyne have no more money than you have.

### Railroad Fare Allowed

I will allow your railroad fare to Chicago, and if you should need part-time work I'll assist you to it. Then, in 12 brief weeks, in the great roaring shops of Coyne, I train you as you never dreamed you could be trained on a gigantic outlay of electrical apparatus... costing hundreds of thousands of dollars... real dynamos, engines, power plants, autos, switchboards, transmitting stations... everything from doorbells to farm power and lighting... full-sized... in full operation every day!

### No Books—No Printed Lessons

No books, no baffling charts... all real actual work... right here in the great Coyne school... building



### Prepare for Jobs Like These

Here are a few of hundreds of positions open to Coyne-trained men. Our free employment bureau gives you lifetime employment service.

- Armature Expert, to \$100 a Wk.
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- Inventor... Unlimited
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- Service Station Owner up to \$200 a Week
- Radio Expert up to \$100 a Week

### Now in Our New Home

This is our new, fire-proof, modern home wherein is installed thousands of dollars' worth of the newest and most modern Electrical Equipment of all kinds. Every comfort and convenience has been arranged to make you happy and contented during your training.

real batteries... winding real armatures, operating real motors, dynamos and generators, wiring houses, etc., etc. That's a glimpse of how we make you a master practical electrician in 90 days, teaching you far more than the average ordinary electrician ever knows and fitting you to step into jobs leading to big pay immediately after graduation. Here, in this world-famous *Parent school*—and nowhere else in the world—can you get this training!

### Jobs—Pay—Future

Don't worry about a job, Coyne training settles the job question for life. Demand for Coyne men often exceeds the supply. Our

employment bureau gives you a lifetime service. Two weeks after graduation, Clyde F. Hart got a position as electrician for the Great Western Railroad at over \$100 a week. That's not unusual. We can point to Coyne men making up to \$600 a month. \$60 a week is only the beginning of your opportunity. You can go into radio, battery, or automotive electrical business for yourself and make up to \$15,000 a year.

### GET THE FACTS

Coyne is your one great chance to get into electricity. Every obstacle is removed. This school is 30 years old—Coyne training is tested—proven beyond all doubt—endorsed by many large electrical concerns. You can find out everything absolutely free. Simply mail the coupon and let me send you the big, free Coyne book of 150 photographs... facts... jobs... salaries... opportunities. Tells you how many earn expenses while training and how we assist our graduates in the field. This does not obligate you. So act at once. Just mail coupon.



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COYNE ELECTRICAL SCHOOL, Dept. 10-52  
500 S. Paulina St., Chicago, Ill.

Dear Mr. Lewis:

Without obligation send me your big free catalog and all details of Railroad Fare to Chicago, Free Employment Service, Radio, Aviation Electricity, and Automotive Courses, and how I can "earn while learning."

Name.....

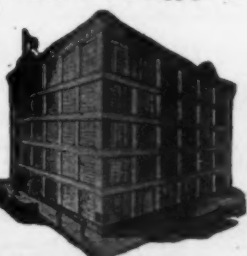
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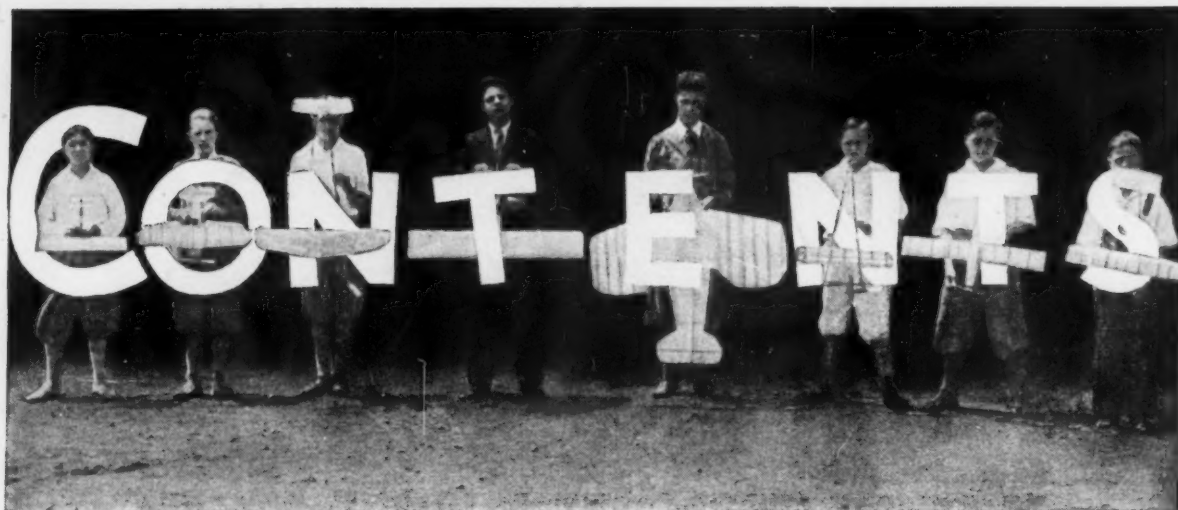
City.....State.....

# COYNE ELECTRICAL SCHOOL

H. C. LEWIS, Pres. Established 1899

500 S. Paulina Street - Dept. 10-52 - Chicago, Illinois





Vol. 2

JUNIOR MECHANICS  
and

No. 1

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"ONE LIFE TO GIVE"—Upholding the Honor of the Secret Service  
By Anatole Feldman

HOW TO BUILD A BERNARD LOW-WING PURSUIT PLANE—Also an L. E. Pontoon Tractor

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Wing Spread, 27"

Fuselage, 28"

Weight, 2½ Oz.

We specialize in lowest prices for all model airplane supplies. Balsa Wood cut to any specifications. A new store has been acquired for the sole purpose of handling our big supply business. **ALL ORDERS RECEIVED BEFORE 10 A. M. SENT OUT BEFORE 1 P. M. OF SAME DAY.**

Your money instantly refunded if this plane does not make consistent flights of 250 feet or more.

## At Last Guaranteed Performance

**FIVE** new exclusive features never before obtainable in any model airplane are concentrated in this Flying Glory Monoplane. In public demonstrations before literally thousands of people, the Flying Glory has made official flights of a thousand feet or more.

### Exclusive Features;

- Solid balsa wood fuselage sides—lightness and strength.
- Patented motor with special springs at back and front—prolonged steady power.
- Detachable rudder, stabilizer and wings—flight control.
- Removable nose piece—allowing easy adjustment for speed or endurance flight.
- Scientifically designed fuselage construction—minimum wind resistance.

The Flying Glory is designed by I. Sturiale, sole maker of test models for Carisi, builder of Levine's Transatlantic Columbia and Burnelli, originator of the Burnelli Type of Aircraft.

It is impossible to give the best picture of this revolutionary plane in words. It is really necessary to watch the Flying Glory's perfect Rise off Ground strong controlled flight and invariable three point landing to fully appreciate the wonderful advance in model flying which it represents. There is absolutely no plane anywhere obtainable which can approach it in *simplicity of construction*, durability and flying performance.

The Flying Glory can be made into FIVE

other distinct types of aircraft with guaranteed flying distances of 200 to 1000 feet. With three attachments, a pair of ski's, pontoons, and wings the Flying Glory can be converted into a Seaplane or Snowplane and a bi-plane type—Seaplane or snow plane, a **total of SIX different models**. These attachments are so made that they in no way effect the center of gravity of the plane. They can be attached and removed in five minutes without tools. All types are R. O. G. and R. O. W. models and will make perfect landings on land—snow—and water.

All three attachments sold completely constructed and can be bought separately.

Kit sent complete with LIFE SIZE plan and detailed instructions. Average assembly time three hours. NO boiling—all parts cut and shaped to fit. Absolutely no tools needed.

**If your dealer cannot supply you SEND COUPON**

**CRESCENT MODEL AIRCRAFT CO., 1805-07-09 Benson Ave., Brooklyn, N. Y.**

**—Flying Models with Guaranteed Distances—**

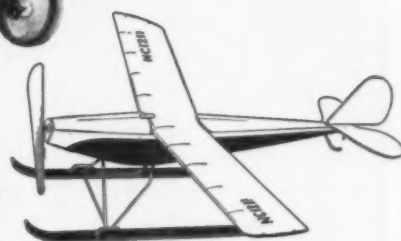
Send me the items I have checked today. I am to receive immediate refund of money upon returning plane if model does not fly 250 feet as guaranteed.

- ☐ Flying Glory Monoplane Semi-Constructed Kit, complete.....\$3.00
- ☐ Bi-plane wings..... .75
- ☐ Pontoons ..... 2.00
- ☐ Skis ..... .75
- ☐ Six-in-one Flying Glory, all attachments..... 6.00
- ☐ Catalogue ..... .05

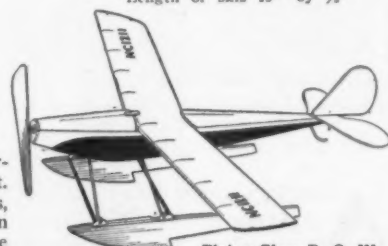
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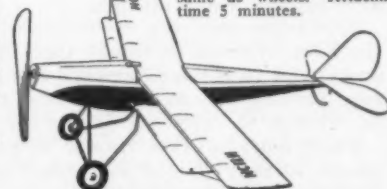
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"BYRD"  
Flying Glory Snow Plane; Skis like Byrd's ready to attach.....\$.75  
Special spruce construction built to eliminate friction. Length of skis 13" by 1/4"



Flying Glory R. O. W. Seaplane; Pontoons read to attach.....\$2.00  
Pontoons 13 1/2" long, weigh same as wheels. Attaching time 5 minutes.



Flying Glory Bi-plane; Wings ready to attach .....\$.75  
Gives steady flight and greater lift. With these wings you can also make a flying bi-plane sea or snow plane. Measurements—9 1/4 by 2 1/4 inches.



**A** SQUADRON of land-planes in close formation roared over a small town in Arizona recently.

Headed towards the municipal airport, they were rapidly losing altitude.

This indication of a landing was the signal for all the boys in town to mount their bicycles. The long, dusty mile to the landing-field was scarcely noticed as they pedaled furiously. The first few arrivals might be allowed to carry oil or gasoline for the aviators!

The winner of this frantic bicycle race found the planes already landed and lined up in a long row. Eighteen planes! Never had such an armada settled down on this field.

The planes were beautifully painted a silver color. Along each side of the fuselage were the words, "U. S. NAVY"! One of the pilots of the future who had pedaled out from town was overheard to say, "I thought the navy used only seaplanes!"

This idea is one prevalent among those who do not live on the seacoast. Because the navy's sphere of action in the past has been the sea, people unconsciously associate its aircraft directly with the water. That is, to them a naval airplane means a seaplane. It is not generally known that the majority of planes in the navy are landplanes, though they can be converted into seaplanes if desired.

If this is so, where are the landplanes used? For that matter, where are the seaplanes used? This is a short endeavor to clear up the apparent mysteries surrounding naval aviation activities.

Most boys can now recognize commercial types of

Old Glory waves in fond adieu as the squadron passes overhead in a "V" flight formation

planes. Moreover, they probably know what class of work a particular commercial job should be set to do; but few boys are able to recog-

nize types of naval aircraft.

Naval aviation can be broadly classified into two groups: Shore stations and fleet aviation. Shore stations are generally bases for the purpose of training pilots or for overhauling planes used by the fleet-aviation forces. Here, also, are operating bases for the fleet aviation when the ships to which they are attached are not at sea. Experimental work is generally carried on at shore stations; also active squadrons may be assigned to them.

**P**RINCIPAL shore stations are maintained at San Diego, Pensacola and Norfolk. The far-flung tropic shores of Honolulu and Panama also furnish a background for naval air activities. An example of how aviation has drawn the navy inland is the reserve aviation station at Milwaukee—2000 miles from the sea.

Two or more Vought observation planes are based upon each battleship. These are, of course, seaplanes, although they are convertible into landplanes, or even amphibians. Their duties are manifold and varied.

They are equipped with both receiving and sending tube radio sets. The generator is turned by a small propeller placed in the slip-stream of the main propeller. Specially made helmets must be worn by the radio operators in order to shut out the noise of the engine exhaust. However, the primary job of battleship planes is to observe the gunfire of the ships to which they are attached. By radio the aviators report

# An Intimate Peep Into the Life of Uncle Sam's Gallant Airmen in Which the Thrills and Daring of an Aerial Life at Sea Will Hold You Spellbound—

back to their ship any correction necessary for the aiming of the huge guns. In this way battleships can fire accurately on objects over the horizon and entirely out of sight.

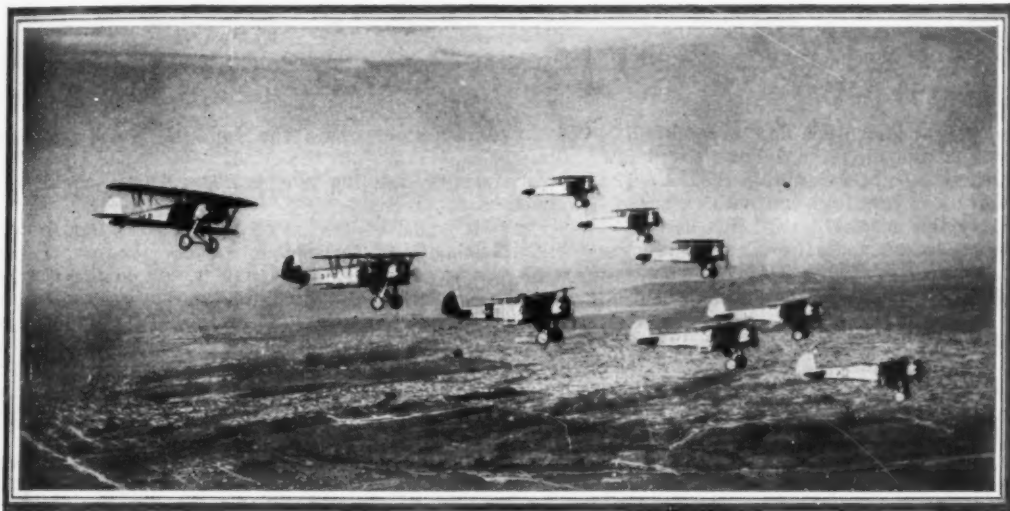
These planes also serve a very useful purpose by acting as scouts. Just as the pioneers in the covered wagon trains sent scouts ahead to prevent ambush, so do fleets send swift light forces and swifter planes ahead to prevent surprise. The speed and enormous cruising radius possible with a plane has made it ideal for this purpose.

Our light cruisers also carry this type of plane. They perform, in general, the same duties as do aircraft on

he can drop his plane on top of the chosen swell. In this manner he will lose speed as he coasts down into the trough of the sea. If successful, he knows that the next swell will not throw the plane up in the air and he can breathe once again. However, if the pontoon touches below the top of the swell, he will soon find himself from ten to twenty feet in the air with no flying speed. Staggering back to the water, the pontoon will strike flatly with a resounding smack. The jolt will rattle the pilot's teeth, jar his backbone, and may bend a couple of pontoon struts.

The airplane carriers, of course, are most apt to appeal to the imagination of a person. This is especially

true of the two new ones with their tremendous power, size and speed. Those old historic names, *Saratoga* and *Lexington*, conjure up thoughts of battle that excite one. We all know the size of the municipal airport at our own hometown. We've all probably seen some pilot "overshoot" the field and find it necessary



Squadron of shipboard fighters in attack formation passing overland to the mother ship

battleships. Their duty, however, is to scout, for that is the mission on which a cruiser will likely be assigned. The planes in reality extend the eyesight of the lookouts in the fighting tops to a point many, many miles over the horizon. A strange pass indeed when the all-important lookout can safely go to sleep!

When battleships and cruisers are at sea their planes are launched into the air by means of a catapult. In a short run of approximately fifty feet a plane is thrown into the air at a speed of close to sixty miles per hour! A period of about two seconds is consumed during this operation. Contrary to what one might think, very little shock is experienced by the pilot while being catapulted.

When landing, these scouts settle down on the water close to their ship and are hoisted back aboard with the aid of a crane. By maneuvering the battleship or cruiser the sea can be smoothed out somewhat. This is called "making a slick". In order to take advantage of it the pilot must land immediately following the maneuver. He will then have a small area at least free of "whitecaps". At best, however, a landing at sea in rough water is probably the most difficult task encountered in naval aviation.

The pilot selects one of the swells that is headed toward him. He must hold his plane in the air in such an attitude and at the slowest possible speed, so that

to make a second attempt before he can land. The idea of a plane landing on the comparatively small and restricted deck of a ship is intriguing, indeed.

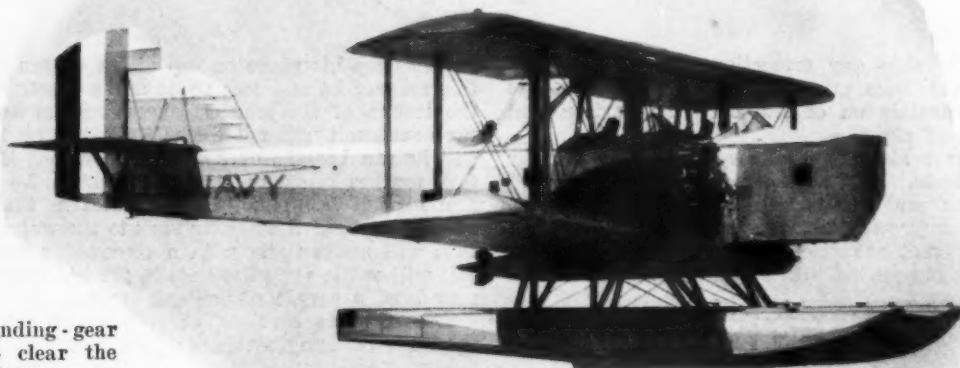
**A**CTUALLY, the problem is quite simple. The pilot landing ashore is faced with the ever-present possibility of ground-looping, and must "fly his plane to a stop." On the other hand, the carrier pilot makes his approach, levels off, and is stopped. Then, too, he isn't worried by high-power and telephone lines that persist in remaining on the approach side of so many commercial fields. When once the proper mental balance concerning the carrier is reached by the pilot, his troubles are practically over.

Landing aboard a carrier is entirely a matter of relative speeds. For instance, suppose the ship is headed into a ten-knot wind at a speed of twenty knots. The velocity of the wind across the deck is then thirty knots. The plane then has a speed of twenty knots relative to the deck of the ship.

Crashes while coming aboard, of course, are not unknown. However, there has not been a fatal accident from a landing aboard a carrier. The most usual thing is to lose a wheel while making a skidding landing. This results, at worst, in the plane's nosing up.

There are two cases on record of the pilot making too low an approach.

Three-seater naval bombing seaplane in flight



The landing-gear failed to clear the deck and was completely wiped off the plane. In each case, the plane merely slid along the deck upon its fuselage, little the worse for wear!

When the *Langley* first joined the fleet every landing was a potential crash and only the acknowledged few were allowed to even attempt a landing aboard. The percentage of crashes was very high but nothing serious occurred. Gradually the mental hazard has decreased and now a pilot is landed aboard after a regular course of preliminary training.

When the original landings were being made motion pictures were taken of every attempt. This was an effort to analyze the cause of crashes. Any possibility of an "alibi" on the part of a pilot was removed, for here in slow motion pictures was his landing—and the result!

The photographers have now become so proficient that they can recognize a potential crash while the plane is still approaching the deck for a landing. Then, do they start cranking their cameras. Seldom are they wrong. In fact, when the camera-man starts cranking now every one in that vicinity jumps to a position of

vantage in order to see the fun. A library of the films is kept and when the crash reels are to be shown at the regular evening movies aboard ship, a full attendance is assured.

Practically all of the navy's fighting, strafing, bombing, scouting, and torpedo squadrons are now based upon the various airplane carriers. It is the reason for the preponderance of landplanes over seaplanes. That explains why the boys in inland cities think a movie company has come to town to film a picture when a squadron of planes with the words "U. S. NAVY" painted on each side of their fuselage lands at the municipal airport.

By the expression "based aboard the carriers" it is meant that when the carriers go to sea for maneuvers or for extended cruises, the squadrons go along on board them. The carriers then become a floating airdrome with accommodations sufficient to care for the entire personnel of the squadrons. Aboard these monstrous ships are storerooms containing every article which may be needed by the airplanes. Here are workshops to repair a plane or overhaul its engine. In short, here is a completely equipped airport such as can be found no place in the country with the exception of a few government aviation fields.

The aviation squadrons of the battle fleet are ordinarily maintained at North Island, which lies in San Diego Bay. It is one of the world's most natural aviation fields. Here the squadrons fire their gunnery practices and carry out their intensive training schedules.

On North Island is also



An aerial view of the U. S. Naval Airdrome at San Diego, California, with its host of "eagles" lined up for inspection

An aerial close-up of a shipboard fighter



(All photographs through courtesy of U. S. Navy, Official Photographs, Naval Air Station, San Diego, California)

Rockwell Field, where the army maintains a skeleton organization of squadrons. During the World War this was an important training center.

As if the jackrabbits which infest the island didn't have enough trouble dodging planes, the marines also maintain several squadrons here. No doubt, the rabbits quite agree with Sherman as regards war. The marines are strategically placed here in an ideal position to go to any end of the world in which an emergency may arise.

With this enormous number of planes operating from a circular island containing 1,200 acres, strict compliance with local air-traffic regulations must be observed. Those who fail to follow these commonsense rules generally serve as an example to those who are left.

When based aboard the carriers the squadrons carry out their schedules as if they were still flying over land. All engines are groomed carefully every day.

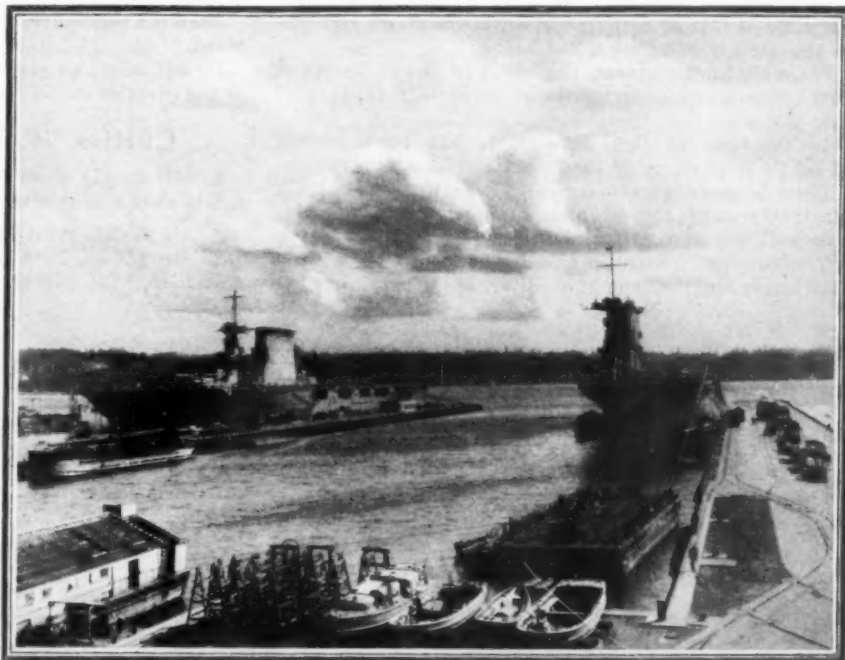
As a safeguard, all landplanes are equipped with flotation gear, consisting of two or more rubberized bags packed in a special compartment and a cylinder of compressed gas. In case the pilot is forced to land in the water, he can trip these bags and inflate them by a valve. The bags will support the plane in the water for a considerable length of time. By landing alongside some ship the pilot is assured of dry clothes and an early return to his carrier-home.

On one occasion during the past winter's cruise nearly 100 landplanes were flown from 125 miles at sea to the city of Panama. Continuing their flight they re-

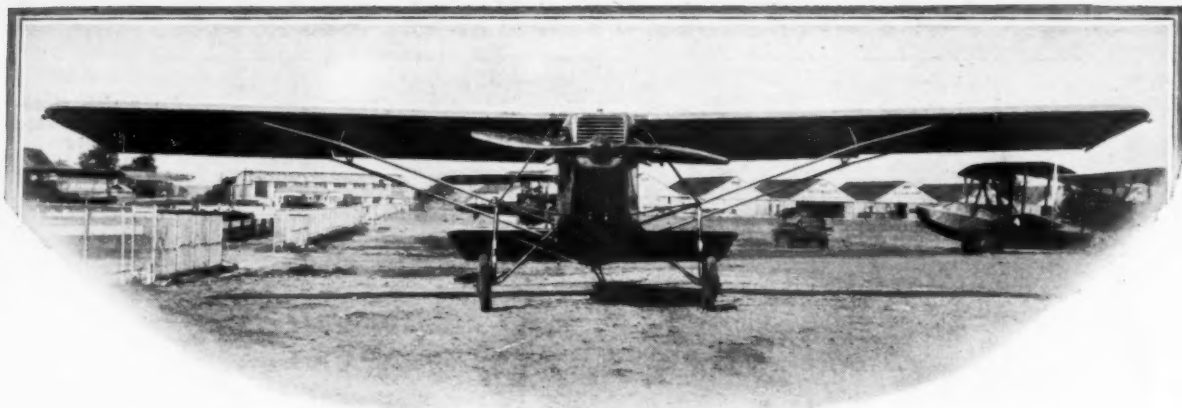
turned to the *Saratoga* which in the meantime had steamed to within sixty miles of the shoreline.

It is interesting to note that the air-cooled engine is primarily a navy development. Due to the foresight of the Bureau of Aeronautics the navy early turned to the air-cooled engine as the future power plant for airplanes. This development began with the Lawrance three-cylinder engine which later evolved as the Wright J series. Offered as competitors were the Pratt and Whitney's *Wasp* and *Hornet* which are now performing so excellently. Out of close to 250 planes accompanying the combined fleets last winter, not a single plane was equipped with a water-cooled engine.

In the navy, aircraft are considered as a class of ship as distinguished from a cruiser, a destroyer and so forth. For certain purposes (Continued on page 50)



Two sea-going "aeries", the *Saratoga* and the *Lexington*, the two largest aircraft carriers in the world



# MONSTER "Robin" Scale-Model Contest

**D**ETAILS count! If it had not been for details thoroughly taken care of by Lindbergh, the chances of his crossing the Atlantic would have been greatly lessened.

Similarly, if it had not been for the meticulous attention to details by Forrest

O'Brine and Dale Jackson, the two St. Louis airmen, it is possible they would not have succeeded in their magnificent feat of keeping the St. Louis Robin airplane in the air for more than 240 hours.

Since that achievement, the editor of *MODEL AIRPLANE NEWS* has received hundreds of requests for plans of this plane.

In response to this demand, it has been decided to hold a contest, using the Robin airplane as a model.

Here is your great chance! Beautiful prizes! A straightforward contest and an opportunity to show how well you know your planes.

The original record breaker was equipped with a Challenger engine, but the editor of *MODEL AIRPLANE*

## "Robin" Scale-Model Contest

Name ..... Age .....

Address .....

In submitting this entry blank, I agree to abide by all the rules of the contest as outlined, and to abide by the decision of the judges.

*NEWS* purposely chose for this contest a model with an OX-5 engine to make construction easier for you. Also on these pages are four views of the Robin, which will aid you greatly in your work.

When you ship your model to us, send with it a photograph of yourself, which

we will require for publication if you are a prize winner.

Read the rules carefully and be sure to fill in the entry blank.

Do not miss this great chance to be singled out as one of the premier model builders.

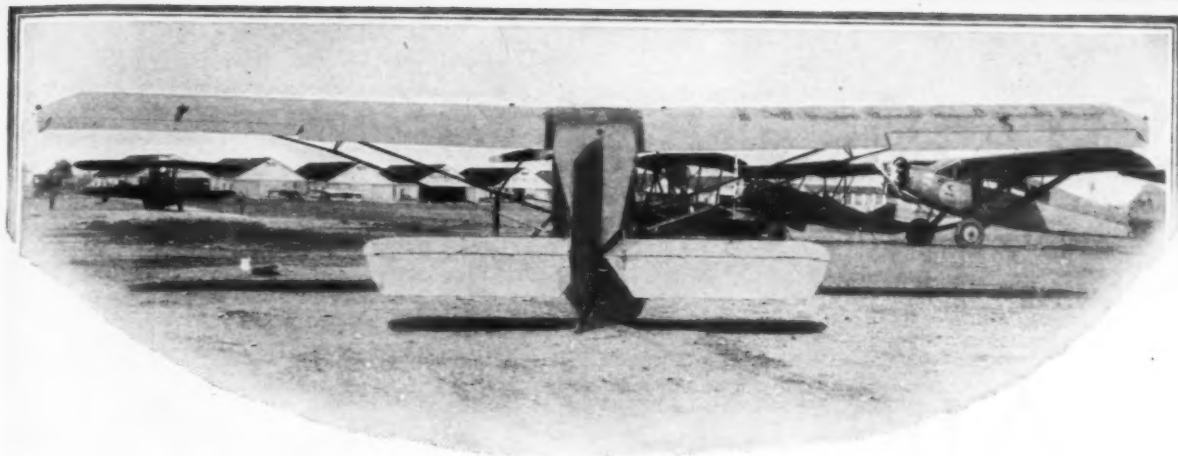
## Curtiss "Robin" Contest Rules

1. All models must be according to scale measurements shown in this issue of *MODEL AIRPLANE NEWS*.

2. All models must be shipped to the Contest Editor, 1926 Broadway, New York City, N. Y., on or before March 15, 1930, express charges prepaid. (*Models will be shipped back to you after contest awards and exhibition.*)

3. All contestants must fill in the entry blank on this page or a copy of it and after filling in all the necessary information mail at once to the *Curtiss Robin* Contest Editor, 1926 Broadway, New York, N. Y., on or





## Here's Your Great Chance!

### Win a Trophy by Building a Model of the Airplane that Shattered All World's Re-fueling Records, Remaining Aloft for More than 420 Hours!

before February 15, or entry will be rejected.

4. The judges for the contest will be announced in the February issue of **MODEL AIRPLANE NEWS**.

5. The winners will be decided on a point system and in case of a tie, all those tying will be declared winners and receive the prizes tied for.

6. The following is the system of point scoring:

Exact scale measurements and reproduction of:

Wing surfaces .....	25 points
Tail surfaces .....	10 points
Fuselage .....	25 points
Motor mount .....	5 points
Struts, landing-gear, tail skid.....	5 points
Exact color scheme and lettering on ship.....	10 points
Neatness of workmanship as a whole.....	10 points
Originality of any parts, controls, instruments, etc. ....	10 points

7. Models must stay on exhibition in New York for a period of two weeks after the close of contest.

8. All readers of **MODEL AIRPLANE NEWS** are eligible to enter the contest.

9. Members of the **Curtiss Robin Aircraft Corporation** or any professional model builders, or

FIRST PRIZE ..... **MODEL AIRPLANE NEWS Trophy**  
(A Silver Model of an Airplane on a Pedestal)

SECOND PRIZE ..... Large engraved silver cup

THIRD PRIZE ..... Large engraved silver cup

FOURTH PRIZE ..... Gold medal

FIFTH PRIZE ..... Silver medal

SIXTH PRIZE ..... Bronze medal

All entries receiving honorable mention will receive a medal

members of staff of **MODEL AIRPLANE NEWS** and Macfadden Publications, Inc., are not eligible for entry.

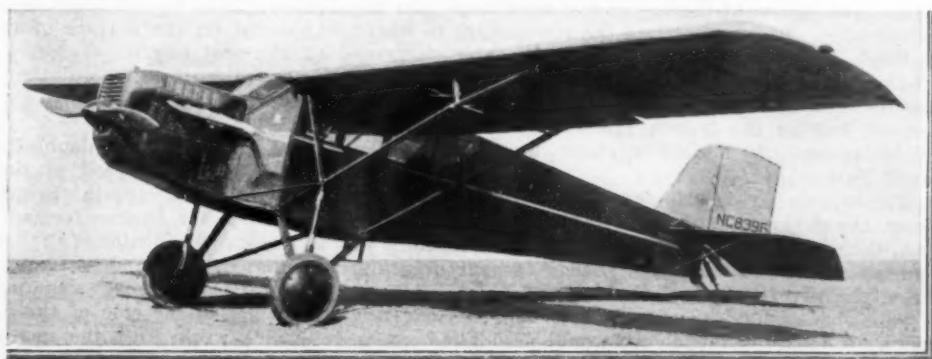
So that's that! Don't forget about your photograph. If you win one of the prizes you will like to see your photograph in the magazine, and we will be glad to publish it. So

when you send in your model enclose with it a photograph of yourself holding the model.

Again let us impress you about details. You will see from the point scoring system that every little detail means more points, and the greatest number of points means first prize, which we know you want to win.

Everything you add in addition to the details shown in plans of the Robin plane means a better chance for you to carry off the honors of the contest.

You stand an equal chance with others, so go to it! We would like to see everybody win.



# SHARKS of the AIR

Vree-turn Wilson,  
a Two-Fisted Airman,  
Braves Danger Ashore  
and in the Air to  
Capture a Gang of  
Flying Marauders



**G**ET it! Two men to each gun! One on the lights! Three with me! A burst over their bow—then the lights—then every man for himself! They haven't spotted us yet—seem to be lying in for something, waiting for their hydro probably. If they start anything, give us the lights at the first pop, then give it to 'em! Remember this is the outfit that got Joe last month.

"To your posts!"

Captain Black of prohibition launch, 9865BJ, station Mayama, and patrol area Mona Passage and the Caribbean coast of Porto Rico, picked up the pile of loaded magazines, each with the ugly nose of a forty-five steel jacket poking out of the top and slipped them into his coat pocket. Peering out into the starlit dark to where a black shape on the water broke the quiet shimmer of the sea, he turned the speed indicator, glowing green on its dial, and the forward thrust of the propeller ceased, leaving the launch just enough momentum to glide forward like a shadow, closer, ever closer to the dark hulk ahead.

The captain strained his ears for the slightest sound from the darkness, but could catch nothing from the sea, though he felt rather than heard the throbbing of a high-powered motor which seemed to pour over him from the sky in rhythmic pulsations.

"Somebody's up," he thought. "I hope it's our new man. It looks as though we would need him."

The launch was losing headway. They were closer

now to the black shape that loomed on the water.

"Close enough," thought the captain. "We may not want to be too close when the show begins."

Slipping down the safety catch on his Colt, he raised it and fired.

From the machine-gun stations at each end of the launch belched their leaden message into the night. From above and just behind him, the 500,000 candle-power beam of the searchlight leaped out and, as though thrown there by the eye-smashing rays, the rum runner appeared on the surface of the sea not twenty yards off the port bow.

"We're too late!" cried the man at the searchlights.

Too late they were!

**H**EAD down, back doubled over the rail, hair swaying with the roll of the vessel, hung the body of the rum-boat captain. Sprawled about the deck-house lay five other lifeless forms.

The speed indicator of the launch was snapped across its dial by the hand of Captain Black and the 9865BJ shot forward. Then, as the propellers raced in reverse, it swung to the side of the other vessel.

"Nice work with the motors, boys!" said Captain Black through the speaking-tube to the engine room and

By  
**Lieutenant**  
**LAIDLAW**  
**HAWKER**



The searchlight leaped out... Head down, swaying with the roll of the vessel, hung the body of the rum-boat captain

indicated that the controls were to be taken by the man who stood ready at his side.

"Three men with me!" he barked as he leaped to the rail. "Men at the guns alert for any signs of a plant. If anything breaks, hang on to them until we get off! *Vámonos!*"

No need to fear that luckless group, however. Once on the deck of the rum runner, Captain Black saw that death alone was in command. After glancing at a series of splintered paths which ran across the deck, he remarked:

"Machine guns from the air. Somebody's helping us. Needn't have been so ghastly about it." Then he returned to take the report of the man who had been searching below decks.

"Two more in the cabin, sir," was the report. "Forty-fives—close work. Cargo of rum been eased off. A couple of broken cases left in the hatchway—"

"What's that?"

The scream of taut wires sweeping through the air at a terrific speed smote their ears. Then, like the reverberations of a hundred drums beating in unison, the roar of high-powered motors burst from the darkness overhead as the plane above came out of its dive and with wide-open throttle swept past. The man at

the lights on the launch swung the beam up and caught for a flash the huge twin-motored hydroplane, showing a swivel gun staring at them from the bottom of the rear cockpit. Then a column of water sprang up from the sea just off the stern of the launch drenching the men at the rear gun.

"Bombs!" shouted the captain. "That was too close for comfort! Cut the lights!"

**W**ITH his men at his heels he cleared the rail and landed on the deck of the launch.

"Take us out of here!" In quick response to his order the launch shot away from the side of the rum ship.

"Here they come again!"

The roar from the sky, which had momentarily faded, was increasing. The hydro must be lower. It was coming back to get them. There was no way to tell whether the crew in the air was holding for the position of the rum boat or whether they had made out the maneuver of the launch. The shattering beat of the mighty engines seemed to be directly above them, in the blackness immediately over their heads. Then, as life itself seemed to cease with the cutting of the motors, the scream of the wires, as the hydroplane was put

into a dive, pierced the sky and echoed through the night.

A blinding flash of jagged red flame—a jarring shock rather than any sound—and the launch keeled sickeningly from the concussion.

The dark shadow of the rum boat rose in the water and then settled with a sudden quick sweep of her stern against the sky as debris from her decks was scattered in the air.

As the launch swung to an even keel, Captain Black spoke sharply:

"Listen!"

The sharp whine of an airplane engine was heard. It rose in intensity as the ship swung over them, broke suddenly, and then burst forth again as the pilot cut his contact switch just above them.

"That's our new man," said the captain. "More power to him!"

Above the drone of the engine, now fading, came the jerky staccato of a machine gun in scattered bursts.

"Bluffing," chuckled the captain. "He can't have caught them yet. He'll let them know they've got a hot one on their tail if he does get within range. More courage in that boy than most men have room for. Feature his tackling those thugs over Mona last week with nothing but an automatic and then bringing them down by crashing them and slipping away in his chute. Well, luck to him!"

"Guess we might as well call it a night. Can't do those poor devils any good by sticking around here. The sharks have saved us a nasty job."

As he spoke, he nodded to where the water still whirled and eddied from the sinking rum ship and where the surface was cut and criss-crossed with the phosphorescent wakes thrown up by a score of black fins.

"I tell you I didn't let 'em get away! They disappeared—evaporated! I don't mind a little razz, but there's something spooky about it. But, by the shades of the flaming DeHavilands, I'll get them if they're in the bottom of the Caribbean!" Vree-turn Wilson was making his report to Captain Black.

A CIGARET butt scattered a shower of sparks as it shot from the holder's hand against the rail of the launch and hissed into the water. Vree-turn Wilson, a two-fisted airman transferred to aid the prohibition forces with his plane, in explosive mood sat in the stern cockpit of the prohibition launch with Captain Black as they discussed the events of the previous night.

"After I passed you, I threw out a couple of bursts just for luck. Then I got below them and picked them out against the sky. I caught up with them easily enough. They seemed to be heavily loaded and I cut under and ahead of them, then zoomed and came down across their line of flight; but before I could get my tracers running right my gun jammed.

"By the time I got her ready for business again,

the hydro was well a head, so I dropped down to put her against the sky again. In a couple of minutes I made her out ahead. Then, just as I picked her up, she dropped behind one of those little coral islands just offshore from Caja de Muertos.

"I stood my bus on her tail, figuring it was a 'come-on' for me to follow her down and get a warm and affectionate welcome from her guns. I swung across in front of the island

twice. Then I decided that if they were ready, so was I, and cut out to sea and came back on the other side of the island about fifty feet up.

"There was nothing on the other side of the island, I tell you! The hydro was gone!

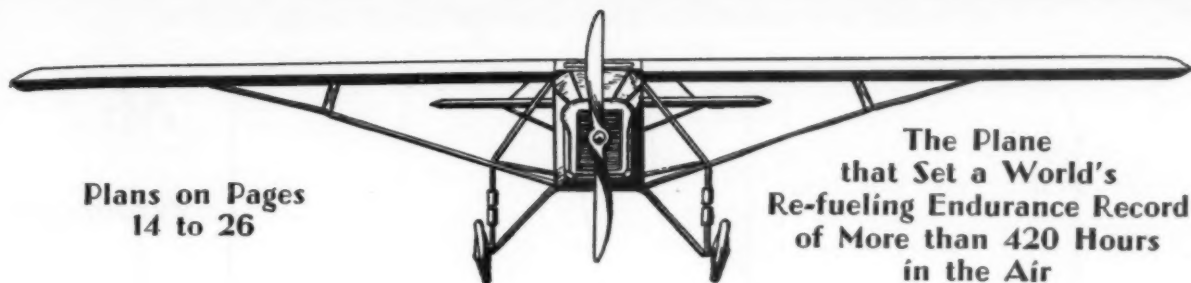
"Yes! I know it was dark last night, but by the shades of the flaming De Havilands, that hydro didn't get away from me! It disappeared!"

"Well, there'll be chance enough to battle those devils," responded Captain Black. "They've been operating along the south coast here for about three months now. We were helpless to get them from the water; that's why I applied to headquarters for a plane. If you go out as you planned this morning, you may pick out the island and discover their base.

"We about (Continued on page 48)



There was a "Rat-ta-tat" from under the palms. The motor sputtered...



Plans on Pages  
14 to 26

The Plane  
that Set a World's  
Re-fueling Endurance Record  
of More than 420 Hours  
in the Air

## How to Build a Flying Scale-Model of the "Robin"

**T**HE "Robin" model described in this article is an all balsa constructed monoplane designed specially for this flying-scale exhibition contest sponsored by the MODEL AIRPLANE NEWS. The drawings are made to a three-quarter inch to the one foot scale of the real Curtiss Robin three-place monoplane and are an exact replica except for the propeller which had to be redesigned so that this model would be able to use a rubber motor and fly. The Curtiss Robin is a great little flyer and will rise off the ground within a few feet and soar sometimes to an altitude of seventy-five feet.

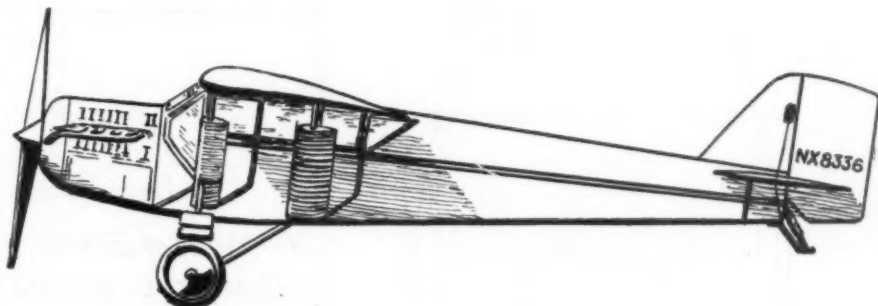
The first experimental model constructed was tried out by the designer, Mr. Thomas L. Bulger, and flew successfully for one minute and twenty seconds with two hundred turns of 1/8" flat championship rubber.

### Fuselage

**T**HE formers, A-1 to A-6 inclusive, are cut to size, shown in drawings 6, 7 and 8 from 1/16" x 6" x 36" sheet balsa. After this is done take your piece of spruce size 1/16" x 1 1/2" x 1 3/4" spruce and cut to the shape of former A-7, as shown in the same drawings. Now cut a piece of balsa, 1/16" x 1/8" x 1 1/4". This is to be used as the fuselage tail block which holds together both sides. The formers 2 to 6 are now spaced in their respective positions as shown in drawings 3, 4 and 5 by using a 1/8" x 3/8" x 12" piece of balsa to act as the former holder.

Small straight pins are used to hold this former holder into place so that after both sides and bottom of the ship are completed we may press down slightly upon this balsa strip with our index finger and release the strip which can be drawn out through the motor opening.

The sides of the fuselage are now cut to shape as shown in drawings 3 and 4 out of a piece of 1/16" x 6" x 30" sheet balsa; the portion of the sheet which is left is to be used for the bottom and top of our fuselage. (In cutting sheet balsa it is advisable to use a safety-razor blade which has a top piece. This is to protect yourself from being cut.) The top of the fuselage is made out of two pieces as indicated in drawing 4. Now, take the sides, which are pinned, and ambroid them to formers A-2 to A-6 inclusive. The spruce former 7 is also set into



place at this time and ambroided tightly and with care.

After the ambroid is dry, shape the tail of the fuselage to fit the fuselage tail block and likewise pin and ambroid that member firmly, holding it into place until it is dry by slipping a small rubber band over the entire end of the ship. Former A-1 is now set into place and fuselage sides shaped properly and set aside to dry.

### Bottom of Fuselage

**T**HE bottom of the fuselage is set into place so that the outside ends of the balsa extend over the sides to allow for cutting away and sandpapering later on. This bottom sheet is fastened on in the same way as the sides, with pins and ambroid, being careful that in shaping the rear end the former holder stick, which is still inside the ship, does not become loose. After the bottom has had time to dry, take out the former holder by pressing down upon the strip lightly and removing the strip through the front end of fuselage. The back half of the fuselage top may now be set into place with pins and ambroid in the same manner as the sides and bottom.

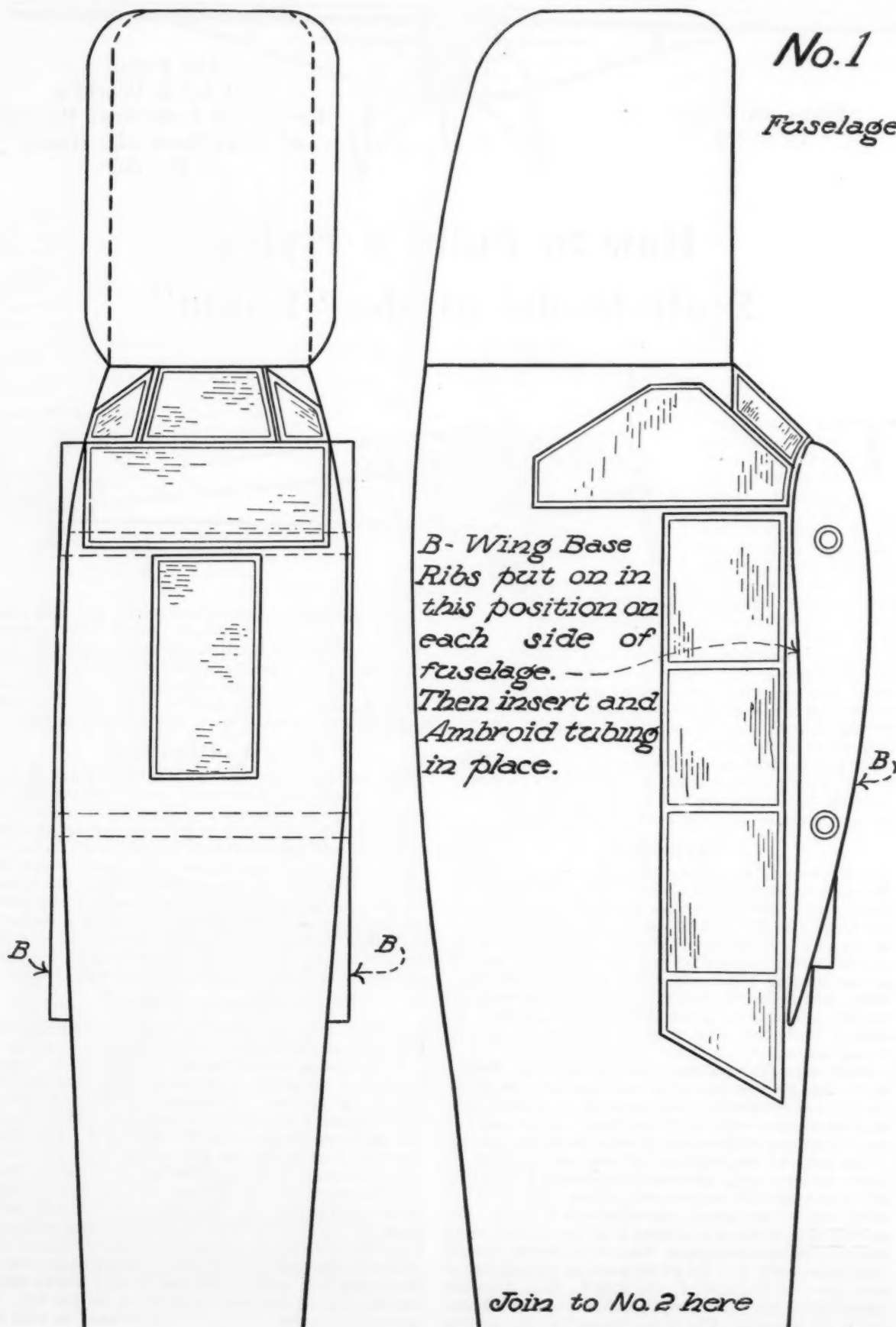
### Fuselage Nose

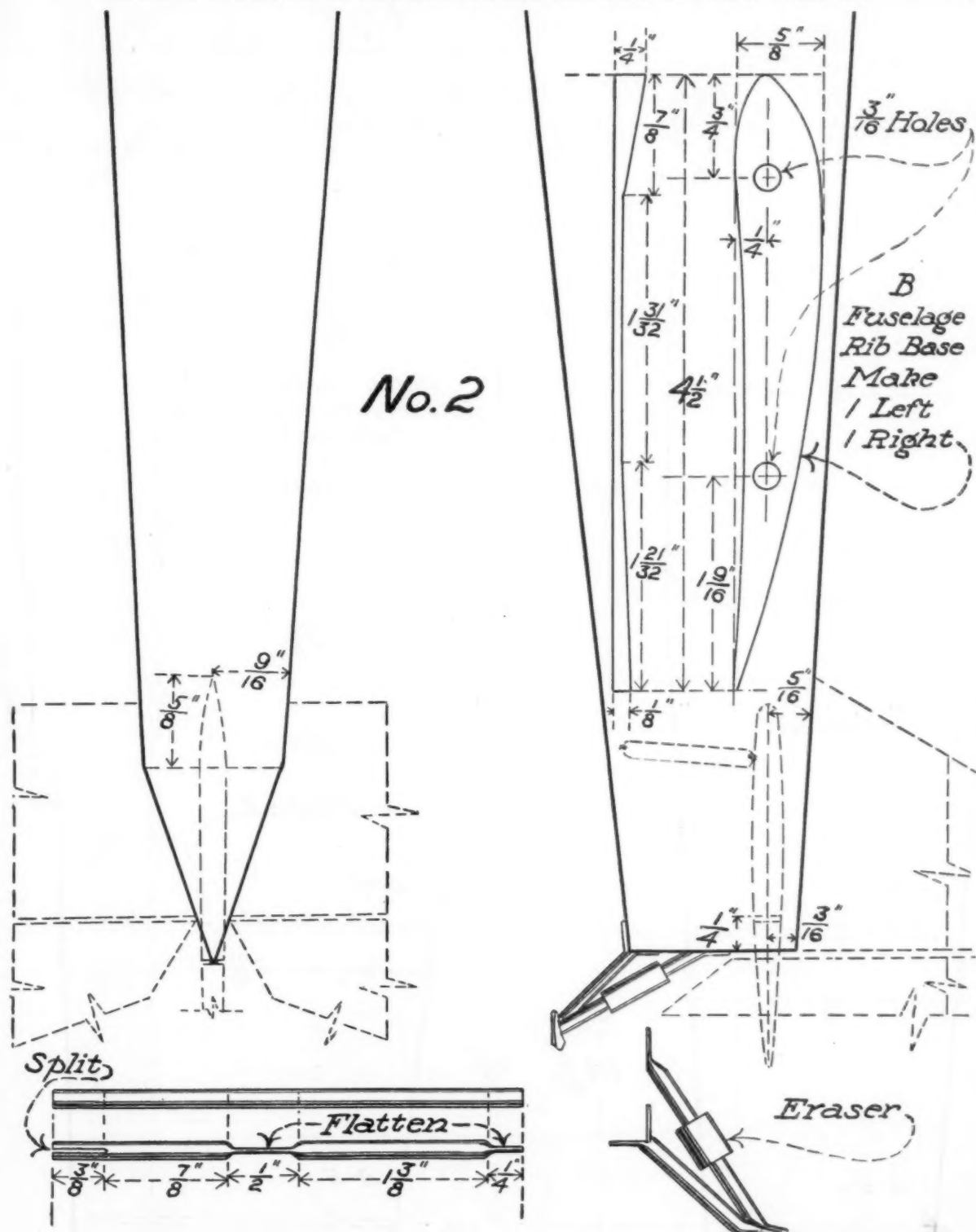
**N**OW we will begin work on the fuselage nose by cutting out formers X and Y, as shown in drawing 6, and also cutting another former exactly like the former 1, which we cut earlier in constructing the fuselage. The top piece is then cut from a piece of 1/16" balsa and the three formers 1, X and Y are ambroided into their correct positions as shown in the drawing 6. After they have had time to dry you may cut out your lower side pieces as shown in drawing 6 and ambroid and pin these pieces into position; do likewise with the bottom pieces as shown in drawing 6. The cylinder cowlings are made from ten pieces of 1/16" x 1/4" x 2 1/16" long balsa cut from the balsa sheet and set into place with pins and ambroid; then put aside to dry. The fuselage nose is then ambroided solid to the rest of the fuselage which has been laying upon our work bench getting dry. Be sure that it is dry.

(Continued on page 44)

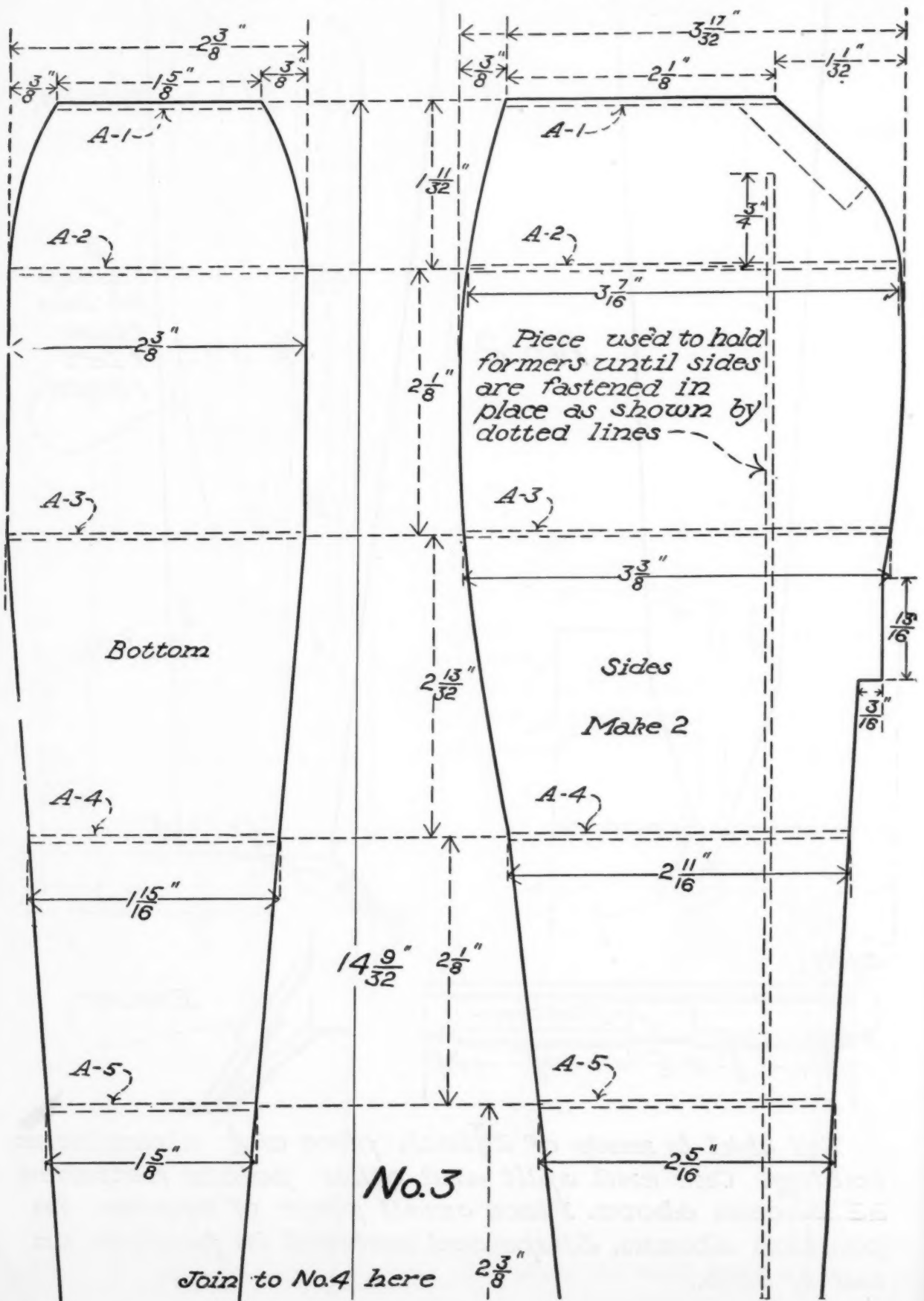
No. 1

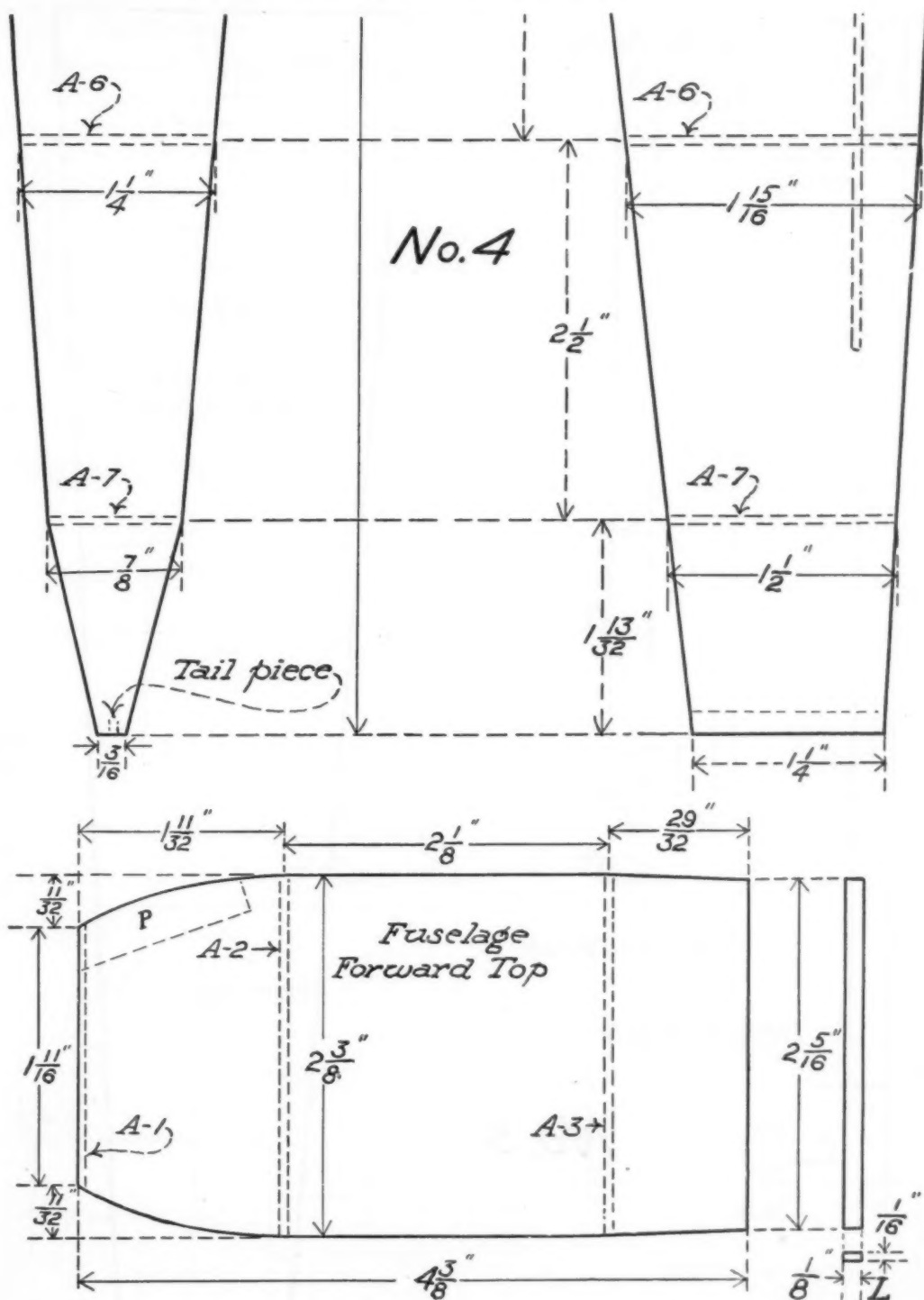
Fuselage

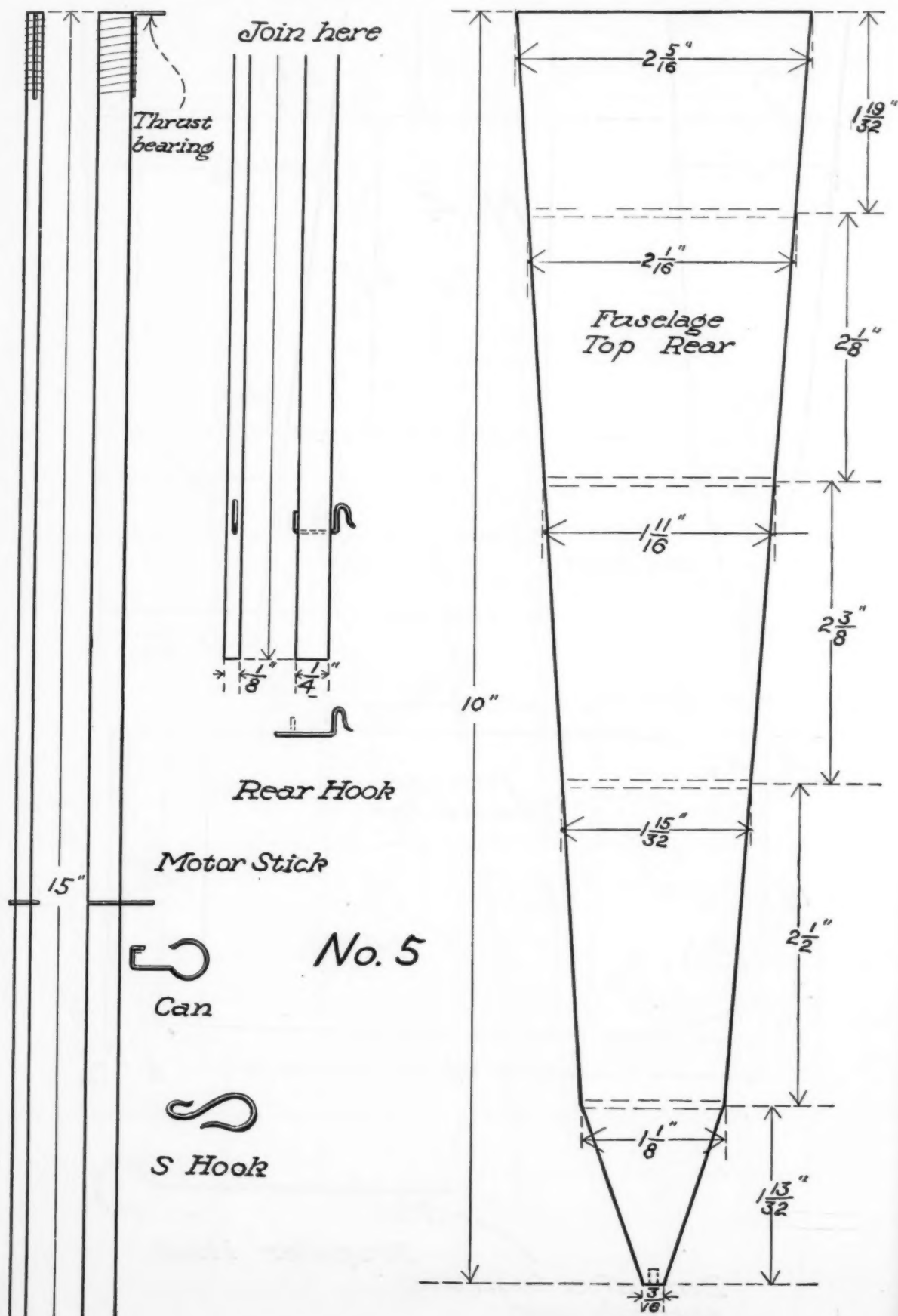




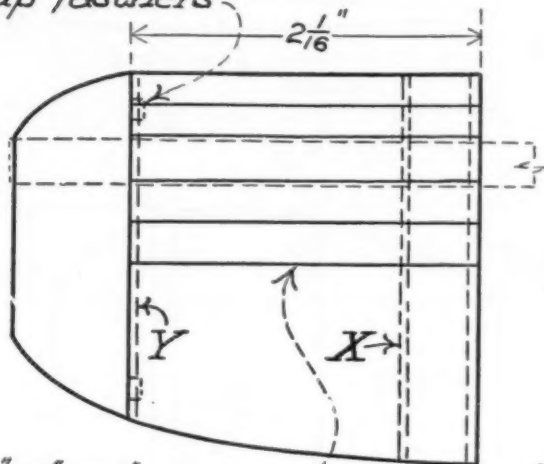
Tail skid is made of  $3\frac{3}{8}$  inch piece of  $\frac{1}{8}$ " aluminum tubing. One end split and other points flattened as shown above. Place small piece of eraser in position shown. Shape and ambroid in position on tail of ship.



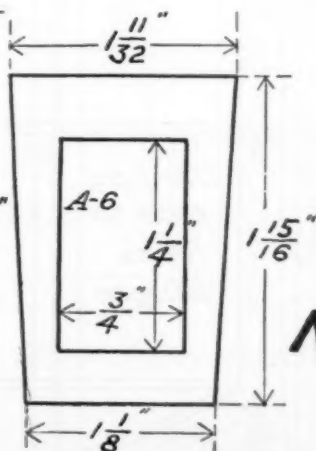
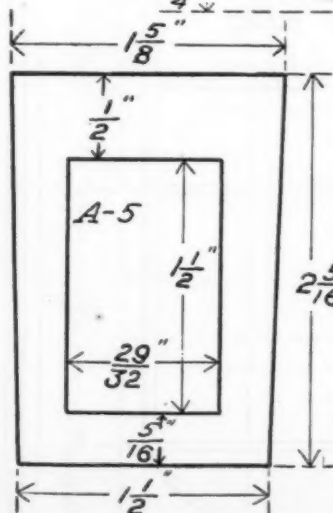
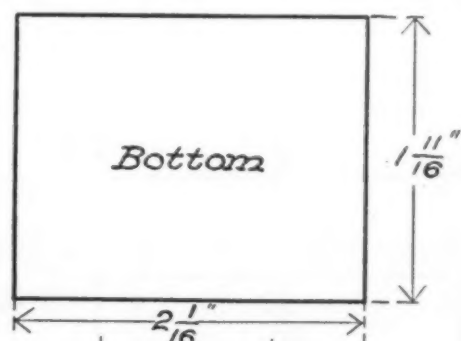
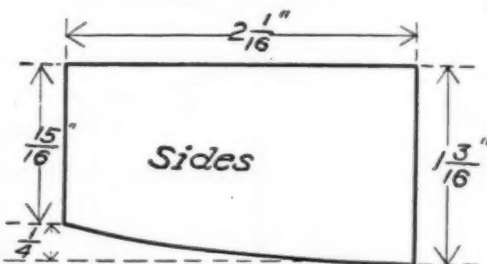
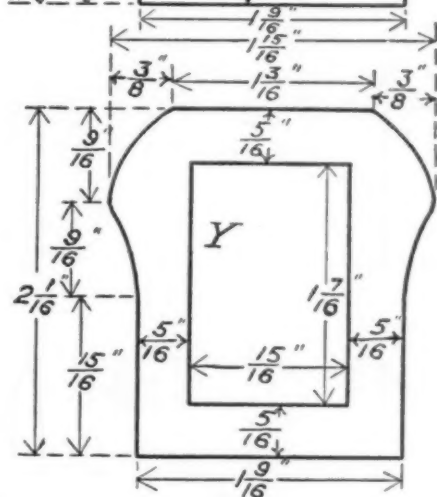
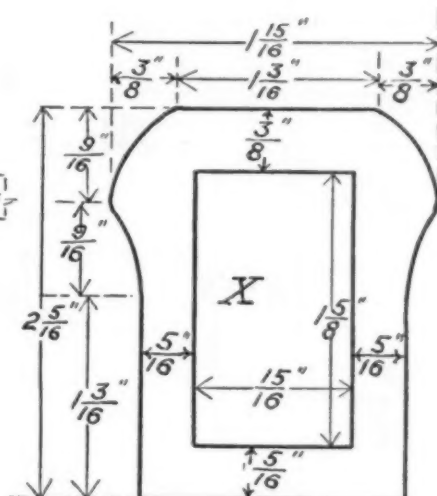
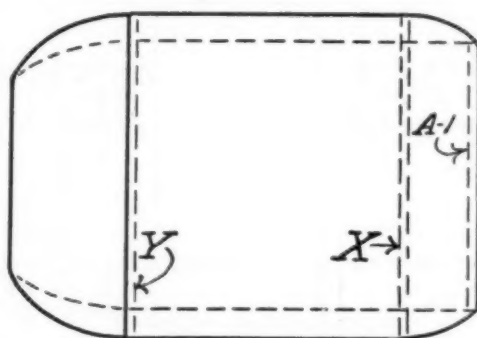




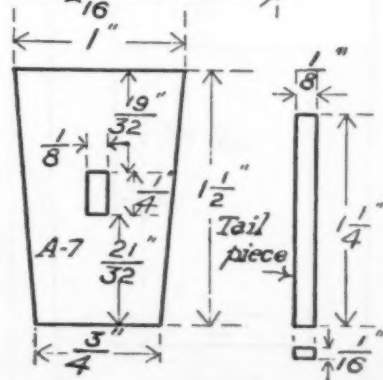
Snap fasteners

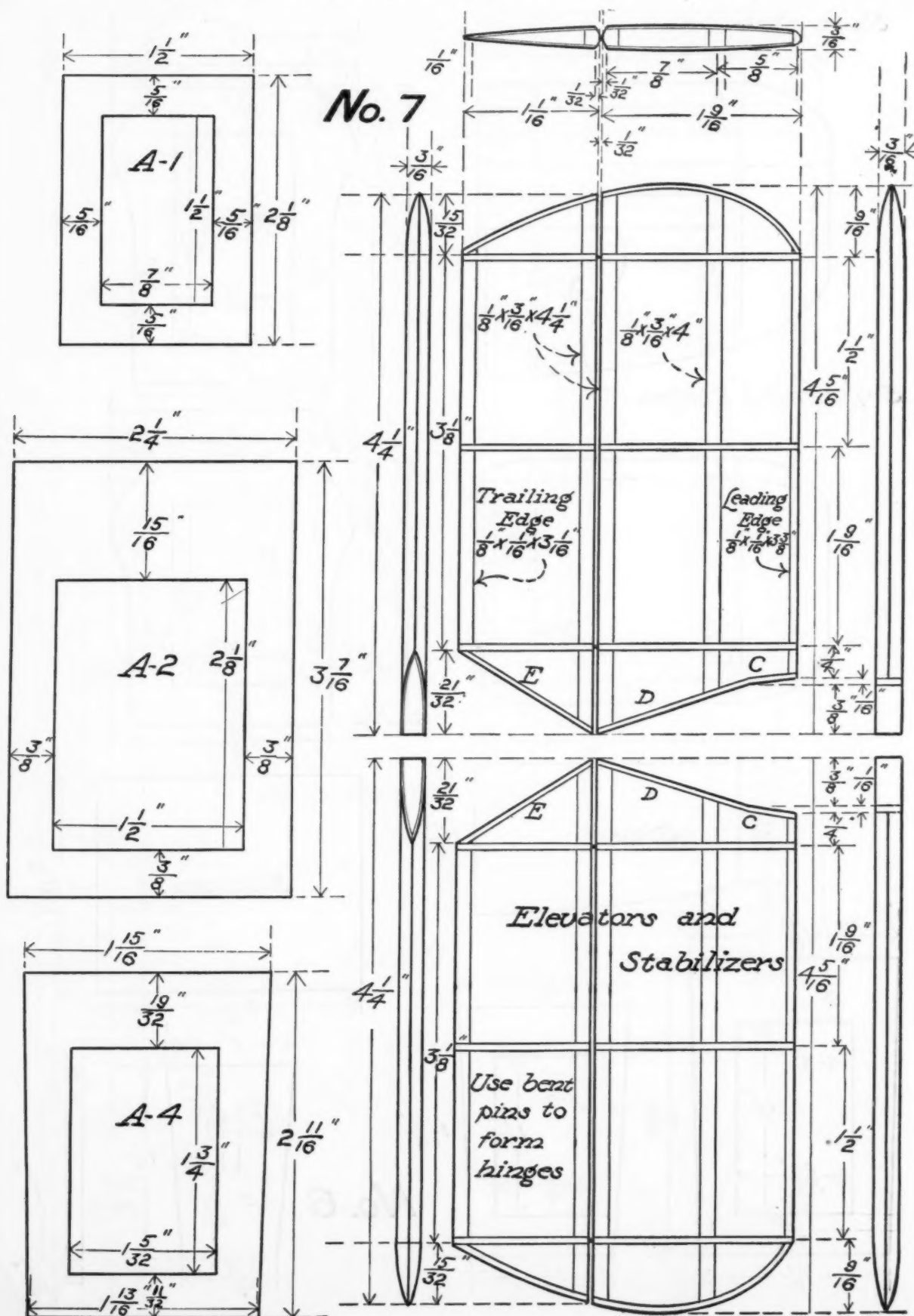


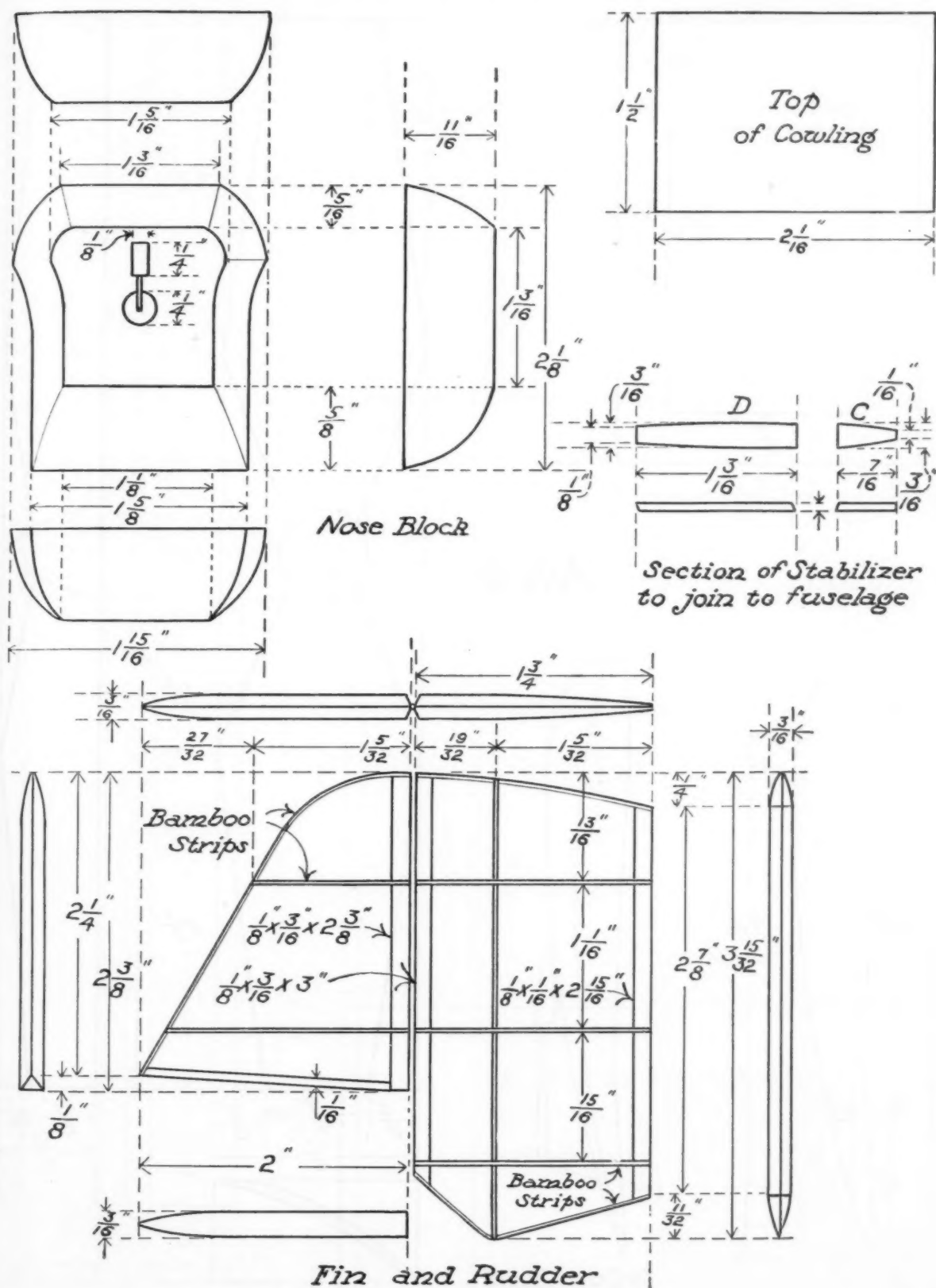
5- $\frac{1}{16} \times \frac{1}{4} \times 2\frac{1}{16}$  Strips



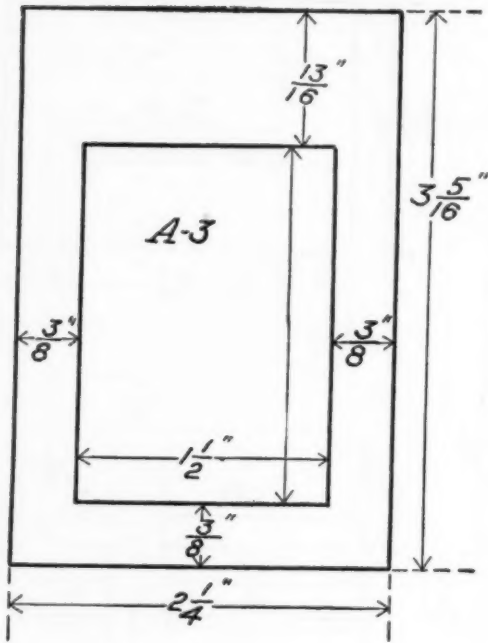
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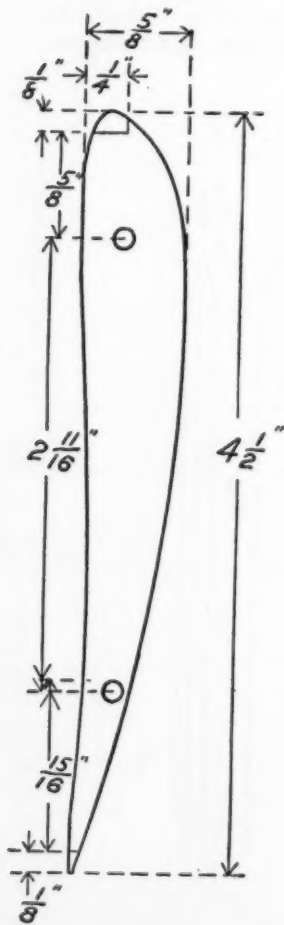




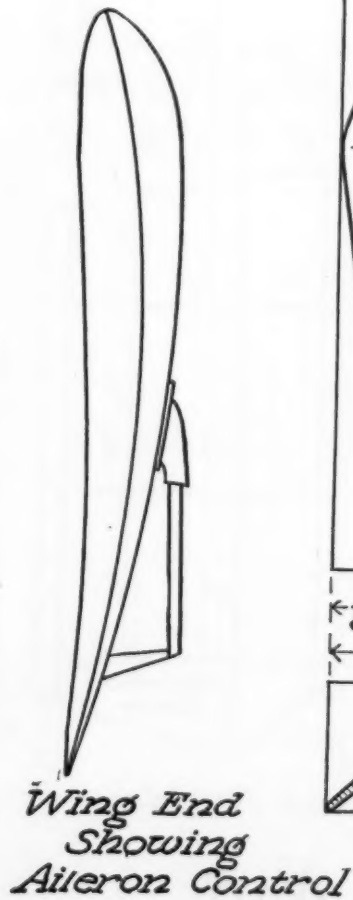
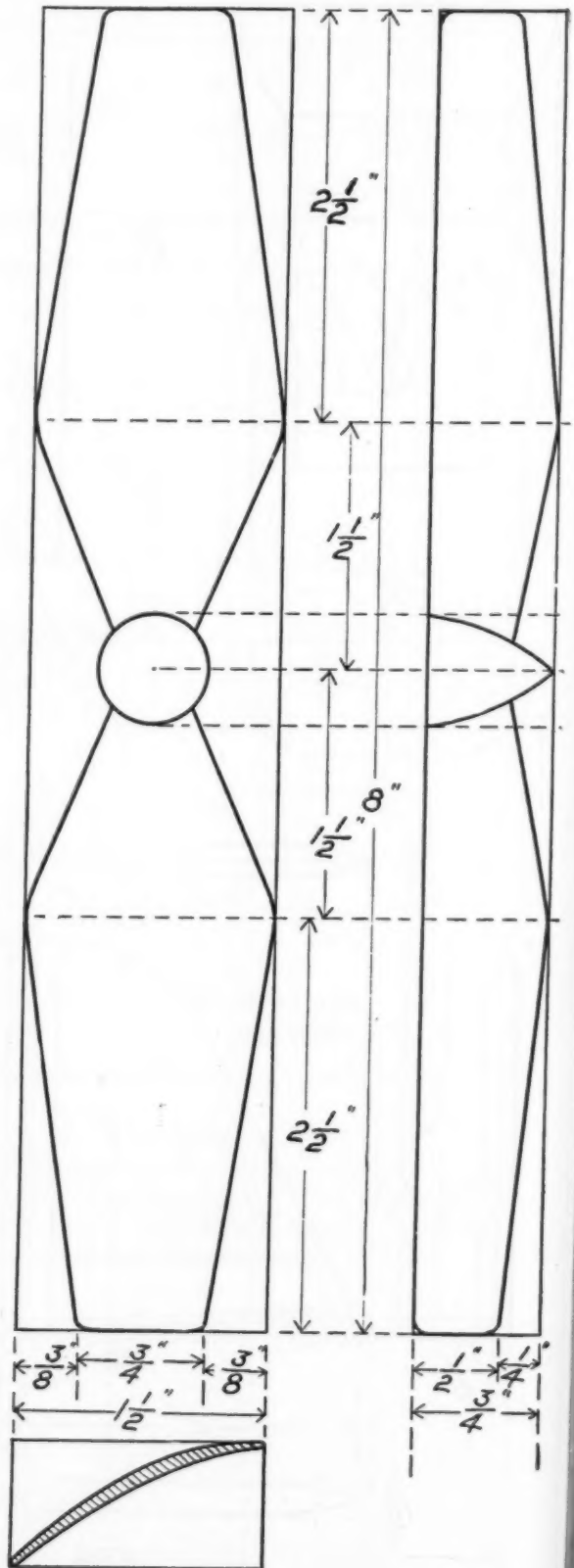
No. 8



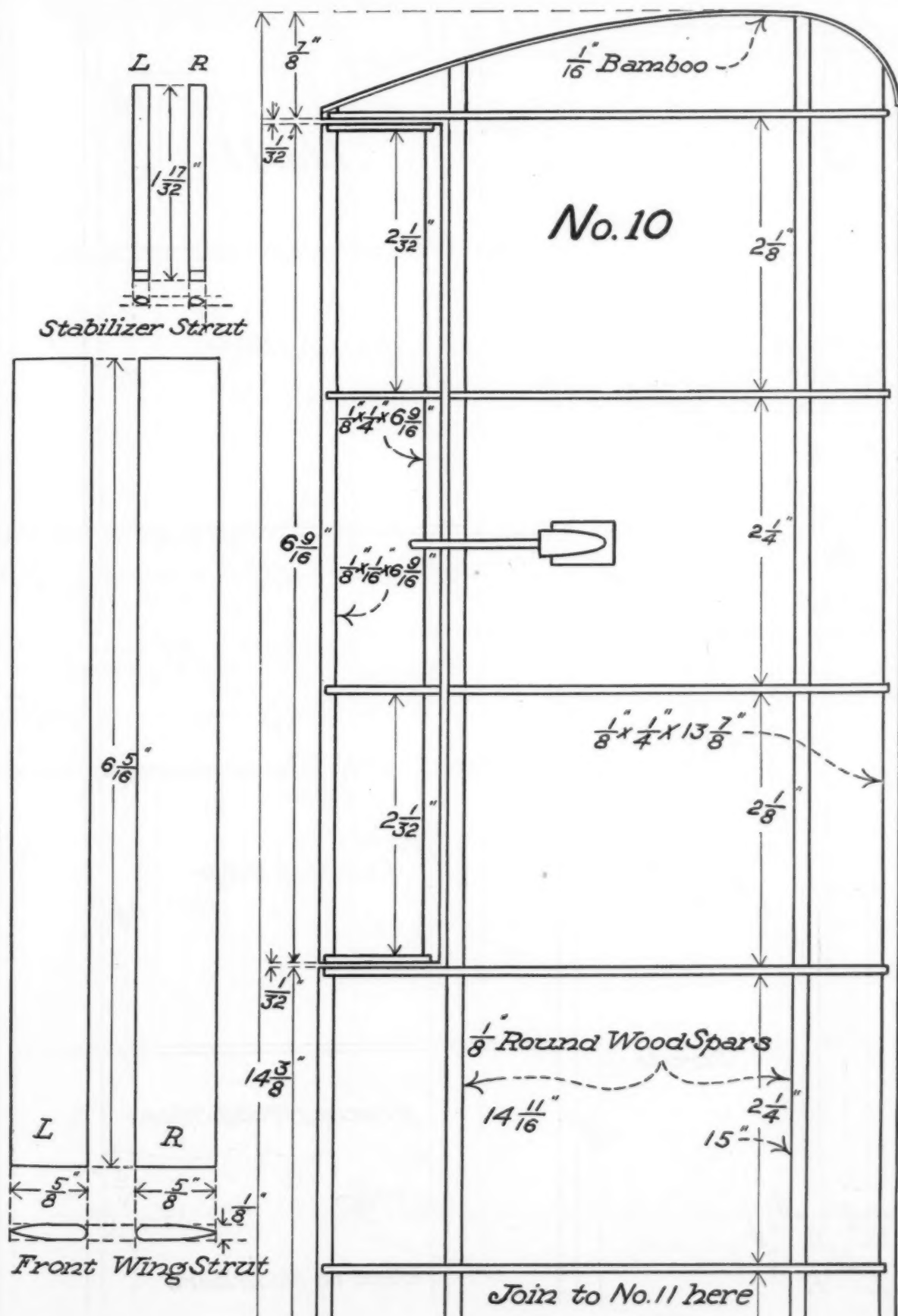
No. 9



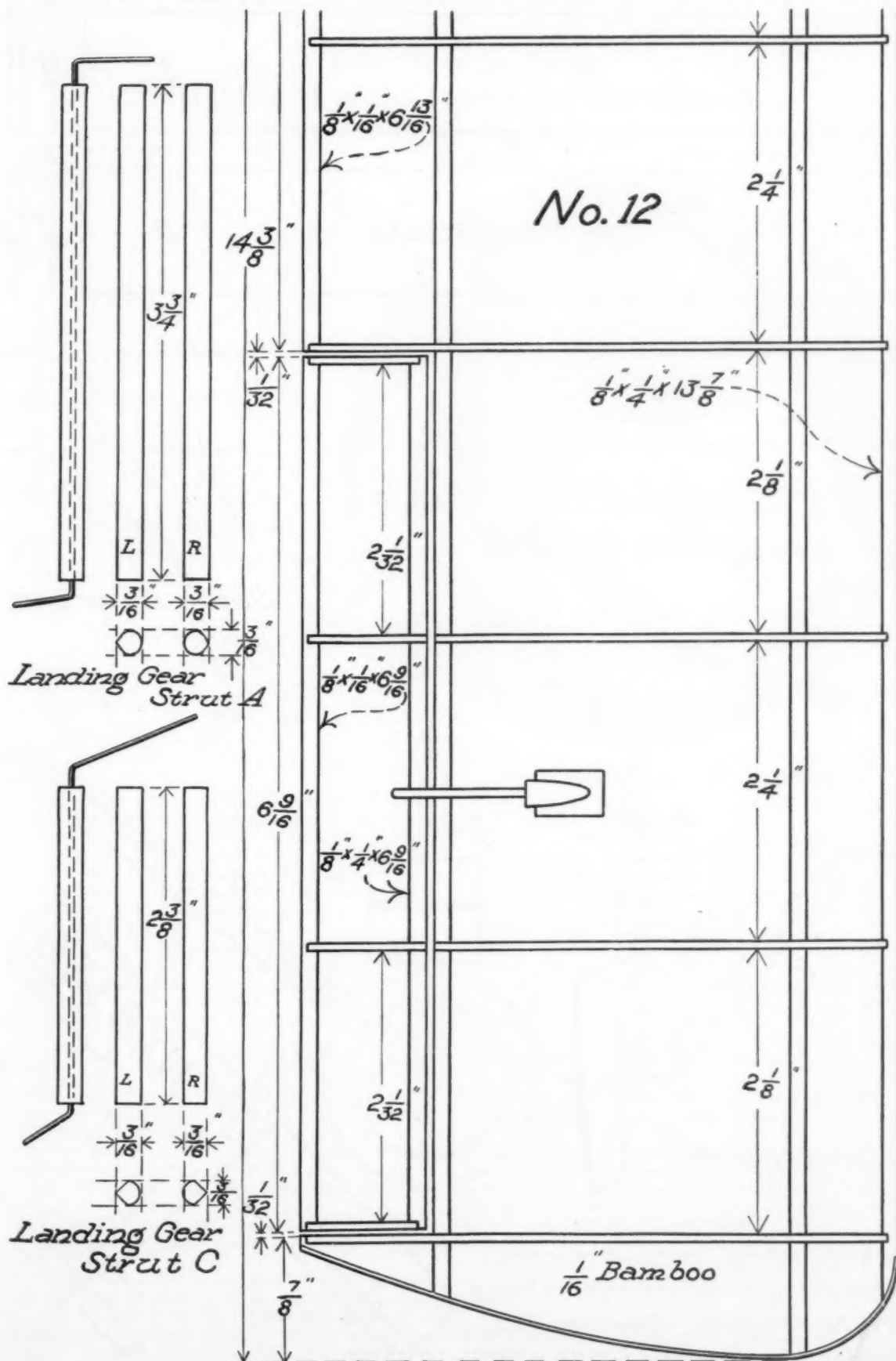
Wing Rib

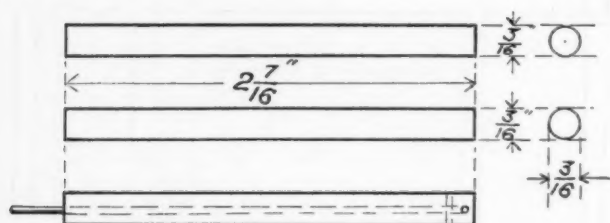
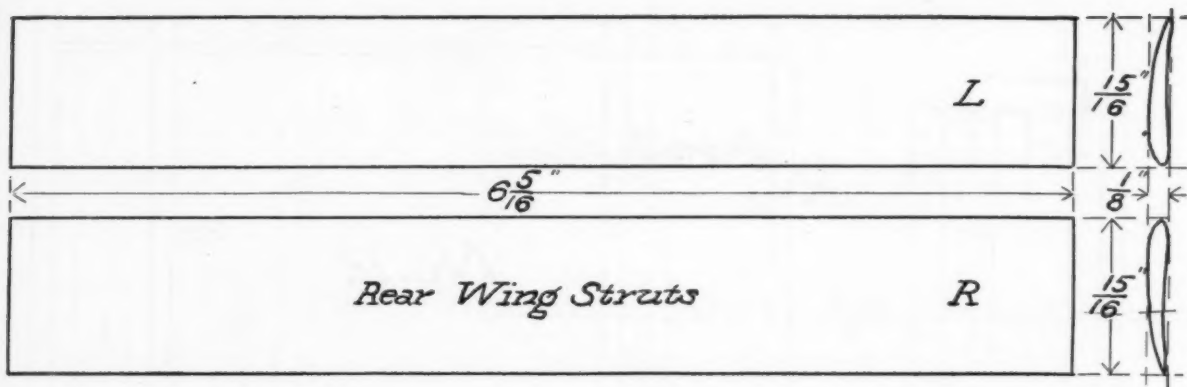
Wing End  
Showing  
Aileron Control

Propeller

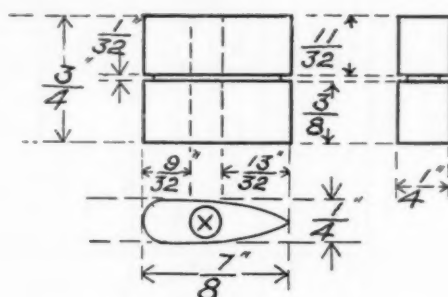




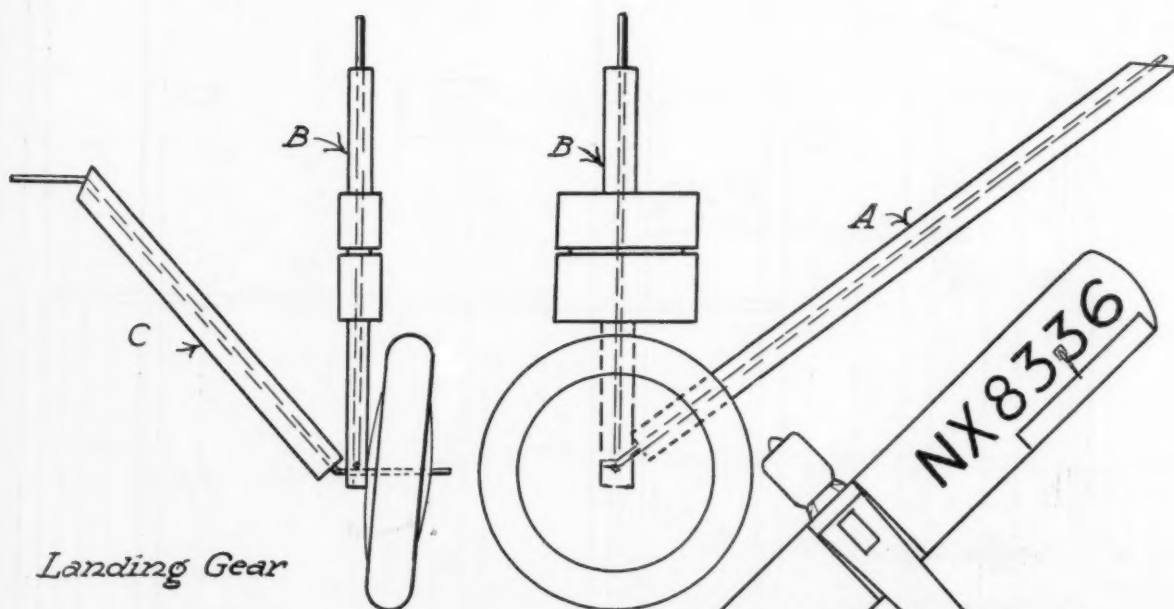




Landing Gear Strut B

Shock Absorber  
Make 2

No. 13



Landing Gear

## Colors

Wings, Wing Struts, Elevators,  
Stabilizers and Struts, and Wing  
Straps—Yellow. Fuselage, Fin,  
Rudder, Cowling and Landing Gear—Orange.

# The American Sky Cadets

Two More Records  
Established at the Louisville Tournament.  
Washington Meet News

**M**ODEL airplane endurance records were made to be broken, so it was only to be expected that the scores of competitors in the Louisville, Kentucky, Model Airplane Tournament recently would carry out that tradition.

There was a surprisingly large crowd of aviation enthusiasts on hand and they were generous in their applause when it was announced that Edwin O'Donovan, of Topeka, Kansas, had won the junior championship, and Ernest Marcouiller, of Chicago, the senior championship. O'Donovan, who scored 16 points, easily outclassed his rivals, as did Marcouiller, who scored 19 points in the senior contest.

Two new world's records for model airplanes were established during the tournament, which was the third held under the auspices of the National Playground and Recreation's Association and which lasted a full week.

Henry Pacevitz, of Chicago, who was third in the junior tournament, with 11 points, created the first record of 14 minutes 35-2/5 seconds. The model he entered was a closed R.O.G. Apparently his model flew for a longer time than that credited, as at the end of the official time it had flown out of sight. However, the time at which it disappeared was allowed and entered as a new record for other model builders to surpass.

Marcouiller, who also entered a closed model, created a new indoor record of 4 minutes 2-1/5 seconds. While the flight in general was surprising to the spectators, it was nevertheless believed that he would succeed, as his championship 19 points amply demonstrated.

**J**OHNNY SULLIVAN, a fourteen-year-old Washington boy and a builder of several prize models, distinguished himself by taking second place with 14 points.

Johnny, incidentally, was not satisfied to win only second place. He went out to create a new record, and did so, keeping his model in the air 8 minutes 21-4/5 seconds, which bettered by more than five minutes the National Playground Miniature Aircraft Tournament record.

All competitors in the tournament were winners in city or regional contests. There were fifty-seven competitors all told.

The tournament's success was assured from the start. It was the closing feature of the Sixteenth National Recreation Congress, and the officials who participated were recipients of congratulations on the smooth way in which everything was run.



This is Johnny Sullivan of Washington, who won second place in the Louisville, Kentucky, tournament, and also established a new record

## Washington, D. C. Meet

**W**ITH the landing of the last tiny plane on the floor of the Macfarland Junior Airdrome, the afternoon of September 6th, one of the most successful model airplane tournaments ever held was completed.

This was the second of the annual tournaments held in Washington by the District of Columbia Model Aircraft League, sponsored by the Community Center Department of the Public Schools.

John Williams, the boys' instructor, can truly be proud of the showing made by his two hundred expert little plane builders. One world's record was broken and almost every one of last year's records for the District of Columbia was shattered.

This year's meet extended over a three-day period, September 3rd, 4th and 6th. Sixteen events were held; ten indoor and six outdoor.

The first event of the meet was for helicopters, the "flying sticks". After these comical little models had finished banging around the ceiling of the auditorium, where the indoor events were being run off, it was found that Clayton Fish had taken the event with a duration of 56 3/5 seconds. Second place was won by Joe Galliher, 56 2/5 seconds and Frank Salisbury carried off third honors with a flight of 55 2/5 seconds.

The next event, for hand-launched scientifics, was won by Herbert Dorsey with a good time of 3 minutes 39 seconds.

Event number three, for baby R.O.F.'s was won by Frank Salisbury in 2 minutes 38 1/5 seconds.

The final event for the day was won by Lloyd Fish

with an R. O. F. flying true scale after a beautiful flight of 1 minute 16  $\frac{3}{5}$  seconds.

The outdoor events were held at Bolling Field, a regular army airport. With the crack army and navy pilots as spectators and with the greater craft of the military service circling above, the little models performed as though inspired.

In the first event of the day the trim little R.O.G. fuselage craft of Everett Meeks, 15, sailed for nearly a mile over the Naval Air Station hangars, finally disappearing into the clouds approximately one-half mile high in the air. The model was timed until the official recorder could no longer see it through powerful field glasses. Everett was given a flight duration of 8 minutes 20 seconds while his trim little R. O. G. plane continued to soar on in what probably would have been a world's record flight. This flight exceeded the former District record by almost five minutes—quite a gain.

In the next event, hand-launched scientific for speed Robert Starkey attained a speed of twenty miles per hour over a measured course of 264 feet.

Then Frank Salisbury, enter-

Morris Silberberg, of the H.N.O.H. Club, with his model Curtis "Hawk" plane, showing it to Lieut. Dorr



ing a four-foot compressed-air model in the dynamic event, walked away from competition with a flight of 10 seconds. This trim little craft described a beautiful parabola and landed only when the compressed air had been exhausted. Frank later made an unofficial flight of over forty seconds with this same model.

In the outdoor helicopter event Frank Salisbury asserted his right to be classed as a real model builder when he came right back and took this event also with a flight of 1 minute 14  $\frac{3}{5}$  seconds.

The final day of the tournament was held in the auditorium of the Macfarland Junior High School.

Herbert Dorsey, present holder of the National Outdoor Senior Championship, who also won last year's meet at Atlantic City, decided to really get going on the last day of the tourna-



Boys of H.N.O.H. Model Airplane Club at Mitchell Field, L. I. Parts of plane are being described by Lieut. Henry Dorr of U. S. Army Air Corps.



Four winners snapped at the Air Derby at Central Park, New York. The group includes, left to right, Donald Gilbert, first prize winner; Clarence Chamberlin, the famous transatlantic airmen who presented the prizes; Biaggio Galdieri, third prize winner, and M. Gayle, second prize winner



Group of youthful Lindberghs at Los Angeles get together in a miniature airplane meet to dedicate the Hawley playground's airport for miniature planes. This is claimed to be the first airport of its kind in the world

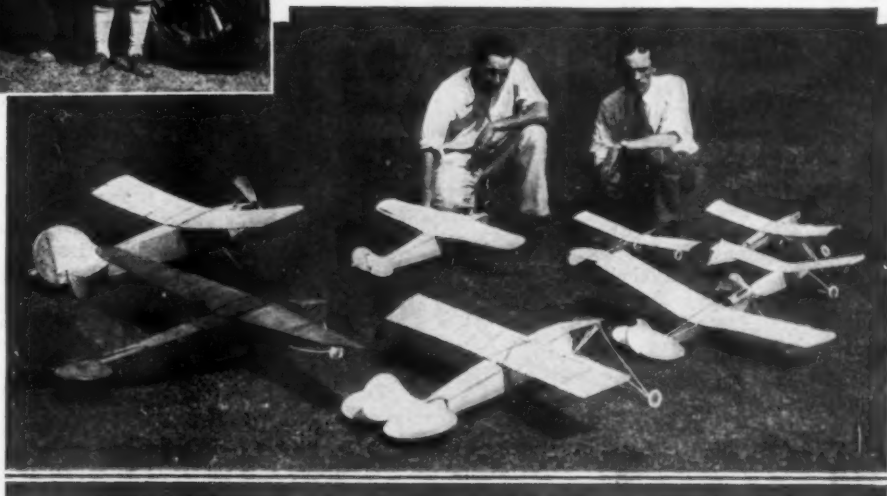
(International Newsreel)

Oliver W. Young and Ralph E. Olson of Los Angeles are shown with eight of their many model airplanes

(Wide World Photo)

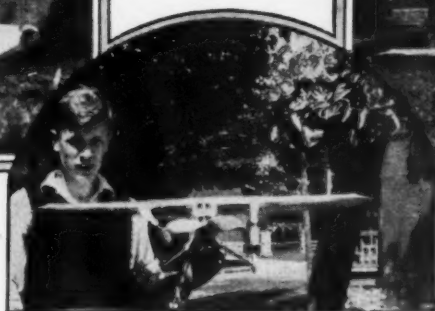
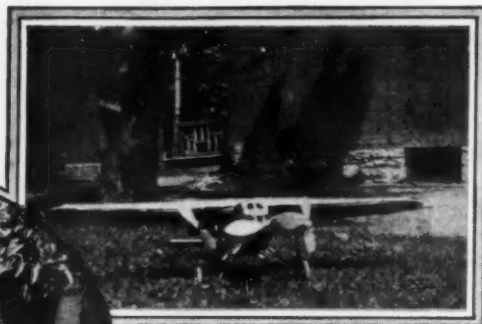
ment. He did this by walking away with three events. With a beautifully performing glider he annexed the hand-launched glider event for duration with a time of 12 minutes  $3\frac{3}{5}$  seconds. Not satisfied, he repeated in the R.O.W. (rise-off-water) scientific seaplane event by discouraging competition with a record-breaking flight of 3 minutes 22 seconds over the course. Then, to show the boys why he deserved the right to be called a National Champion, he entered a little R.O.F. fuselage job which took this event in 2 minutes  $38\frac{2}{5}$  seconds.

Otho Williams, with an (Continued on page 46)



# Two More Prize Winners for Model Airplane News!

**Guggenheim Trophy and Central Canada Exhibition First Prize  
Won by George Bounds and Frank Pearce, Respectively, with  
Models Built from Our Plans**



**A**CTIONS speak louder than words in nearly all cases. The same applies to pictures, and no better proof of the value of the full-sized plans and detailed instructions published in *MODEL AIRPLANE NEWS* as aids to successful model building and prize winning is needed than our pictures which show, at the top, Frankie Pearce of Ottawa and his Tri-motored Ford, and below, George Bounds Jr., of East St. Louis with his Yellow Bird.

Both these models were built from plans published in *MODEL AIRPLANE NEWS* and with them Pearce took the first prize in the Central Canada Exhibition at Ottawa. Georgie Bounds ran away with everything at the East St. Louis Model Meet, crowning his triumphs by winning the Guggenheim Trophy which he is seen holding in his hand in the center picture.

Our pride in their achievement is even greater than their's because through their efforts we are enabled to reiterate our claim that in the world of model airplane construction our plans and instructions are second to none.

Both Frank and George, who are members of the American Sky Cadets, wrote to us voluntarily and below we publish excerpts from their letters.

Frank Pearce, an American Sky Cadet, of 150 Pretoria Ave., Ottawa, Canada, writes in part:

The Editor,  
*MODEL AIRPLANE NEWS*,

Sir: I appreciate your kindness in awarding me my membership and a year's subscription to *MODEL AIRPLANE NEWS*. Owing to lack of support and in-

terest, the contest in which I entered my model was not like your model meets and the planes were not flown during the exhibition.

Other smaller details were also taken into consideration. The official judge of the contest was Mr. A. Crosson of Ottawa. We hope we will soon be able to hold better meets here.

On June 3 there was a sports day here at the Ottawa Flying Club. There was a regular model meet. There were two competitions. The first was for flying models and this was won by a twin pusher built by George

Elliot of Ottawa West. The second was for exhibition, won by the same boy. The prizes for these two were both the same.

I obtained my first issue of *MODEL AIRPLANE NEWS* from one of the news stands here. My plane has flown 40 feet and landed successfully. It took me about two weeks to build it. Then I covered it in two days.

George Bounds' letter reads in part:

The Editor,  
*MODEL AIRPLANE NEWS*,

Sir: Attached is a photograph of the Yellow Bird monoplane built from the plans and instructions in the September issue of *MODEL AIRPLANE NEWS*.

The large photograph shows the trophies, including the Guggenheim Trophy, won by me with this plane in a contest held in St. Louis recently.

GEORGE E. BOUNDS, JR.,  
646 N. 10th Street,  
East St. Louis, Illinois.

Is it any wonder that we are proud of our model builders? They are a credit to us and to themselves.



# How to Construct a BOB-SLED

Hammer, Saw and Bolt Some Old Lumber into a "Speed King" for You and the Gang!

**O**NE of the greatest experiences that can come to a boy is a ride on a bob-sled. It is a thrill of a lifetime. Ask Dad. He still thrills

when he tells you of the hours spent with the old gang on the hills, the race to see who could travel the greatest distance and all the other experiences. It gets into a fellow's make-up and he never can forget it. He has his sled. He races with the other fellows for speed, distance and so on, but when the crowd piles on to the old bob-sled, well—there is nothing like it! And that is not all of the story.

One of the best parts of the experience is the making of the bob. The hours spent in Dad's workshop with a few chosen friends hammering, sawing, boring, bolting and nailing the pieces of old odds and ends of boxes and other lumber into the old "Speed King." Well, you just can't describe it.

Here is a working plan, list of materials and operations for one. Try it yourself and see what a kick you get out of it. It is as strong as wood and bolts can make it; it is not too heavy and it guides well.

## Working Directions

**L**AY out the runners of sleds according to the dimensions on the plan and work down to the lines. Lay out the shape and notches of one front and one back runner carefully as a pattern for the other runner. Lay out four cross pieces like detail "A" for cross braces for the runners.

Care should be exercised in laying out and working all parts that fit into others so that a perfect fit will be made.

To lay out the notches in the runners into which the cross pieces "A" fasten, be sure to set the gauge to the exact thickness of the cross pieces. Saw down to this line and chisel out the wood working from both sides of the runner. After all work has been done on the runners and cross pieces, fasten together, using 2 1/2" screws. If you use flat-headed screws be sure to countersink the heads.

Next take the 1/8" x 1" band iron, bore or punch

By  
**E. F. FURTH**

holes for your screws. Bend to shape and attach to the runners. Take your 1" x 1 1/2" x 21" material and attach to the cross pieces, using three 1 1/2" flat-headed screws counter-

sunk for each cross piece. Take 1" x 2" x 18" piece, make "bit" in drawing. Bore a hole 3/8" in diameter in the center one inch from each end for the steering rope and then attach to front runners using two 1 1/2" screws on each end.

Piece "B" may be easily constructed by following the detail and plan for attaching. The center hole is for a 3/4" bolt and the end holes for 3/8" bolts. Place "B" on the front sled so that the centers of the holes are 11" from the front edge of the board. Put in the two small bolts but not the large one.

## The Back Piece

**C**ONSTRUCT the back piece that raises the reach or seat board from back sled according to the detail drawing, boring a hole for a 3/4" bolt from end to end and for 3/8" bolts to attach to rear sled top. Attach to rear sled.

Round the front corners of the reach or seat board to a 2" radius. Take the three 1 1/4" x 1 1/2" x 20" for foot rests and work out according to detail "C" to fit under the reach board. Put these on with screws from beneath, counter-sinking the heads of the screws.

## Steering Rope

**P**IECE "F" has a wheel at each end around which the steering-rope passes to make steering easier. Put this piece on with screws. Cut out and screw on the guard rail.

Cut out and prepare pieces like "D" in the drawing and fasten them securely to the reach or seat board. These two pieces with the 3 1/2" x 3 1/2" x 9 1/2" join the reach board to the back sled. The hole through these pieces should be made low enough down so that there will be 1/4" to 1/2" between the top piece "E" and the reach board.

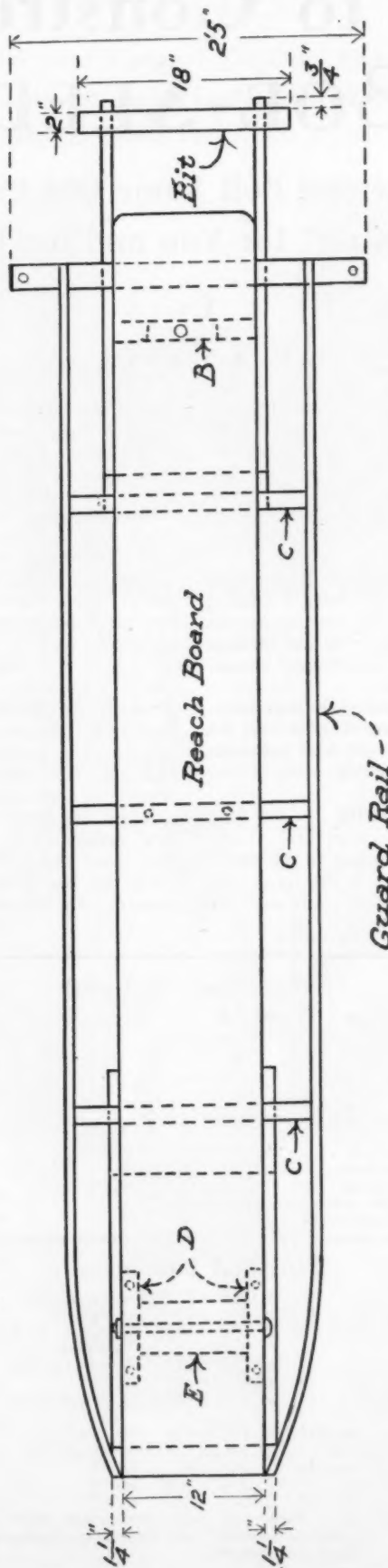
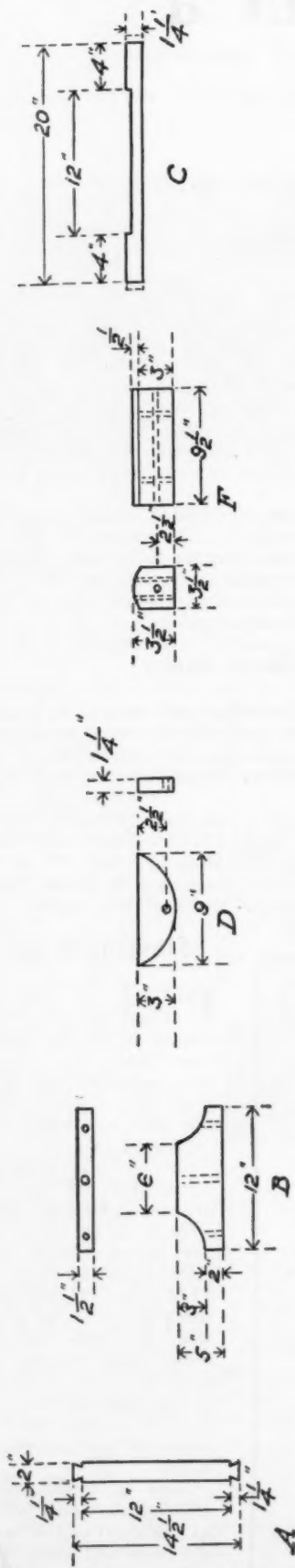
Bore a 3/4" hole through the reach board at the front end to hold the large bolt which was (Continued on page 55)

## Necessary Material

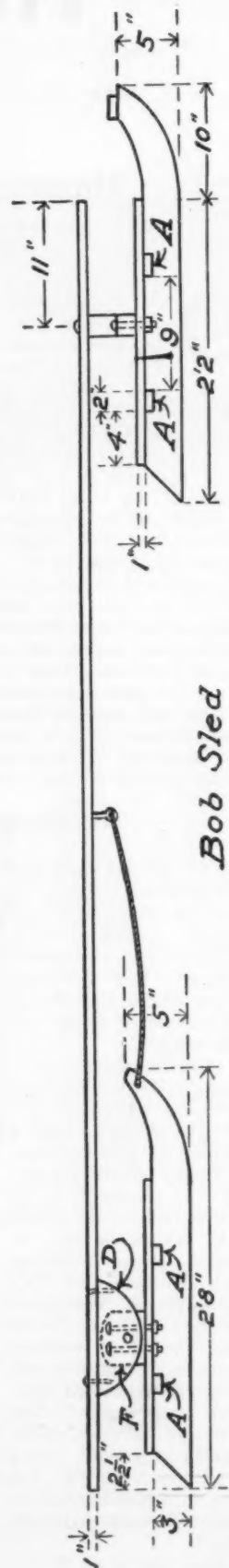
One piece hard wood	1" x 12" x 14'0"
	1 1/4" x 10" x 9'0"
	1 1/2" x 3 1/2" x 12"
	1 1/2" x 3" x 7'0"
	3 1/2" x 3 1/2" x 9 1/2"
Two wheels 2" in diameter	
One bolt	3/4" x 14"
One bolt	3/8" x 6"
Four bolts	3/8" x 5"
Two bolts	3/8" x 3 1/2"
About eleven feet of 5/16" rope	
An assortment of nails	
Four pieces of 1/8" x 1" x 3'0" band iron for runners	

## Finished Dimensions

One piece	1" x 12" x 7'3"	for reach board
Four pieces	1 1/4" x 5" x 2'8"	for runners
Four pieces	1 1/4" x 2" x 14 1/2"	for cross braces for runners
Two pieces	1" x 14 1/2" x 21"	for tops for sleds
One piece	1 1/2" x 3 1/2" x 12"	for "B"
One piece	1" x 2" x 18"	for crosspiece on front runner
Three pieces	1 1/4" x 1 1/2" x 20"	for foot rests
Two pieces	1 1/2" x 1 1/4" x 7'0"	for guard rails
Two pieces	1 1/4" x 3" x 9"	for "D"
One piece	3 1/2" x 3 1/2" x 9 1/2"	for "E"
One piece	1" x 2" x 2'5"	for "F"
Tools: saw, plane, gage, rule, turning saw, knife brace, 5/16", 3/8" and 3/4" bits, chisel, draw knife, spoke-shave and hammer.		



Guard Rail--



Bob Sled

# The Golden Swamp

By  
RAOUL WHITFIELD

Safely Coming Through Many Dangers  
in Their Attempt to Find Their Buddies,  
Squint and Fred Seem to Face  
Certain Defeat, When—

**BRENT FABER,** known as Squint, and Fred Lane set out in a DeHaviland plane in search of their friends—Dave Brown and Lew and Bert Kane—who are cruising in a twenty-eight-foot boat, the Betty G. They are believed to be lost in the dangerous Everglade swamps.

Flying through fog, the boys near the swamp and sight two Indians in a dugout. The dugout disappears just as Fred and Squint identify the object waved by one of the Seminoles as Dave's football sweater.

With nothing but black water below them, Squint makes a forced landing on a narrow ribbon of sand, which fortunately proves to be a strip of beach.

While Fred works over the plane, Squint explores and finds a dugout. Fred saves Squint from being bitten by a moccasin.

Just as the ship is ready for the air a series of shots ring out. The boys hurriedly hop off in search of the shooters. They again sight the dugout carrying two Seminoles. One of the Indians signals them by waving Dave's sweater, then pointing to the north. Can it be that the Betty G. is somewhere near?

The shots and the fact that the Seminoles have with them Dave's sweater cause Squint to fear that their buddies may have met a tragic end.

After several efforts the DeHaviland is brought to a landing and as Fred and Squint jump from the cockpit they are confronted by a Seminole who threatens them with a rifle and accuses them of having stolen his dugout.

Here is another difficulty which will have to be overcome before they can proceed.

Are Fred and Squint to meet the fate they fear has befallen their comrades—? Now read on.



They were gripping each other's arms and hands. Fred stared at Lew's mud-stained face

**W**E look for men—lost,” said

Squint. “We see the dugout—think it no belong to anybody. Me no can fly this—” pointing toward the DeHaviland — “to find lost boys. We borrow dugout—that’s all.”

Fred was nodding his head. The Seminole stared stolidly at them. Then, suddenly, he lowered his rifle.

“Where boys lost?” he demanded.

Squint felt his heart leap. The Indian understood now. He pointed with his right hand.

“Boat over there,” he stated. “We see from up above. No can come down. You help us find boys—we pay you.”

The Seminole shook his head. “No

want pay,” he said slowly. “Me help.”

Fred could not repress a shout of delight. He was grinning broadly.

“You’re a good scout!” he stated. “What’s your name?”

The Seminole smiled.

“Charlie,” he returned simply.

“Charlie!” Fred stared at the Seminole, then at Squint.

“All right, Charlie.” Squint did not appear at all surprised. “Can all three of us ride in the dugout?”

The Indian nodded. “Plenty room for lot more,” he stated calmly. “May take much long time find boys. Bad place—over there.”

Squint nodded.

“We’ll have light for hours,” he stated. “You hear shots, Charlie?”

The Seminole grinned. “Me make shots!” he stated. “You take him”—he pointed toward the craft—“me want get back.”

Squint stared. Then he recovered himself. He spoke

quietly so he would not arouse the Seminole again.

"How many shots you make, Charlie?" he asked.

The Seminole held up three fingers. Fred was frowning.

"There were *other* shots," he said grimly.

Squint nodded. "We'll load some water and food into the canoe and then get going," he stated. "There's no use worrying about shots. The chief thing is to get to the *Betty G.* Let's get into the ship, Fred, and unload some of the stuff."

Twenty minutes later they had water and food in the dugout. Fred had showed the Seminole the sketches he had made from the air and Squint had explained slowly the appearance of the stream and mangrove growth at the spot where they had seen the twenty-eight-footer.

Charlie had listened with a frown on his brown face. But he had nodded his head several times.

"Me mebbe know place," he had stated and Fred had let it go at that.

Squint took Fred aside before the three got into the canoe. The Seminole was inspecting the plane with considerable curiosity and Squint and Fred were standing near the dugout.

"Don't ask him too many questions," Squint instructed. "He'll think we're suspicious. I'll ask him a few things I want to know—and that's all. Keep your eyes on the mangrove—I'll watch Charlie."

"And keep your fingers near your automatic," Fred advised grimly. "How come the fellow's named *Charlie*?"

Squint smiled.

"They all have American first names—mostly all, anyway. I'll ask him his other name when we get under way."

He raised his voice. "All right, Charlie!" he called. "We go now."

The Seminole came toward them swiftly. He walked with a fine grace, a wide smile on his face.

"She big bird!" he stated. "Me hear her talk in sky—whoooooooooo!"

Fred chuckled at the Indian's imitation of the exhaust roar. Squint smiled, then his face sobered.

"You think you can find place, Charlie?" he asked. "Know how long take?"

Charlie shook his head, his face suddenly sobering.

"No can tell how long," he stated. "Him bad there. Mebbe two hour—mebbe long time. Me think go place—yes."

Squint nodded. "Let's go!" he said grimly. "I don't like the way things look."

It was almost dusk. It seemed to Squint and Fred as if the dugout, poled by the stripped Indian, had been on the water for ages. They were both badly burned by the sun and stung by the mosquitoes. They had been traversing black-watered streams, ducking through mangrove arches, sitting in cramped positions for almost eight hours. And there was no sign of the *Betty G.*

"We're lost!" Fred groaned. "Why, that boat was only a few miles from the sand strip—we could see that from the air!"

"Steady, Fred!" Squint spoke sharply. "Charlie's doing the best he can. It's tough country through here."

The Seminole, who seemed to be as fresh as when they had started, flashed Squint a smile.

"We near place now, me think," he stated. "We no can go quick—have come far way."

Squint nodded. The mangrove growth and the few Glades, with their tall grass and jungle growth had made a direct line, or speed, impossible. But Fred was becoming impatient and irritable.

"We'll never get out—if we do find the boys!" he muttered. "Even if we get back to the plane, Squint, how are we going to—"

"River—close to big bird." The Seminole spoke calmly. "Run out to big water, east coast. Me show you place."

Squint smiled grimly.

"YOU leave the getting out to Charlie, Fred," he advised. "We can fly out and, if the boys are all right and were only lost, Charlie can guide them out. We're worrying about getting in right now."

Fred relapsed into silence. The Indian poled slowly, but with powerful strokes. His dark eyes were forever seeming to penetrate the heavy foliage of the banks of the stream along which they were traveling.

Squint, seated in a cramped position in what was the bow of the dugout—because of the direction in which they were headed—stared at the mangrove growth, too. Fred dozed and slapped at the mosquitoes, which were making things so miserable for both of them. The Seminole seemed immune from them.

"Look!" It was Squint who cried out, pointing ahead. "The sun's going down—everything's tinted gold!"

Fred straightened in his cramped position back of Squint. Both stared at the water ahead—the mangrove roots and the foliage. The sinking sun was touching all with its glorious color. Even the water had changed. It was not black now—but gold. The roots were tinted and the foliage was a mass of golden color.

"The Golden Swamp!" Squint spoke slowly, his eyes filled with the beauty of the moment. Fred Lane, too, was affected.

"It is pretty!" he agreed.

"I can understand what

father meant now, Squint. All gold—roots, water, everything!"

The Seminole spoke. "We near, me think. If no find soon, we lost!"

Fred groaned, but Squint was staring ahead. A wall of gold—mangrove growth, tinted by the sun that was sinking back of them in the Gulf, blocked their path along the stream.

"It's all gold!" Squint cried. "That's a good omen, Fred. We're getting close to—"

"There!" Fred cut in sharply. "There she is, Squint!"

The Seminole grunted. All three of them were staring toward the right bank of the narrow, golden-colored stream. Bathed in the light of the setting sun was the slanted shape of the twenty-eight-footer—the *Betty G.*

She lay half buried in the mangrove growth, her stern low in the water, the bow slanted high. They had found her at last!

The Indian was poling the (Continued on page 40)

## CASH FOR HINTS

From time to time, **MODEL AIRPLANE NEWS** will print various short articles on time-saving and labor-saving devices, simplified methods and short cuts for the building of models.

We wish to obtain these from the model builders themselves and to do so, we offer ten dollars for each hint submitted and accepted for publication.

All hints should be accompanied by drawings when necessary and copies should be held by the contributors. While **MODEL AIRPLANE NEWS** will exercise every possible effort to return unavailable manuscript, photographs and drawings, it will not be responsible for any loss of material contributed.

THE EDITOR

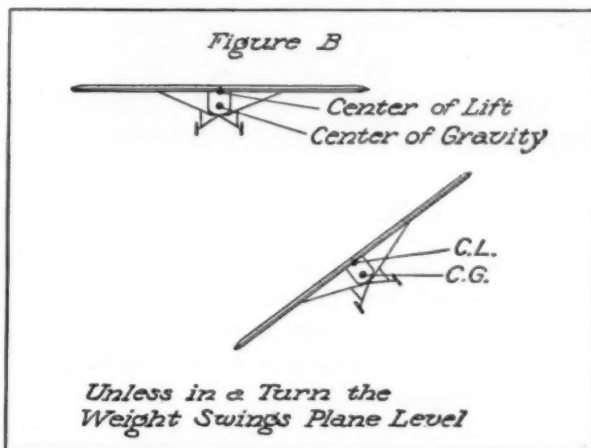
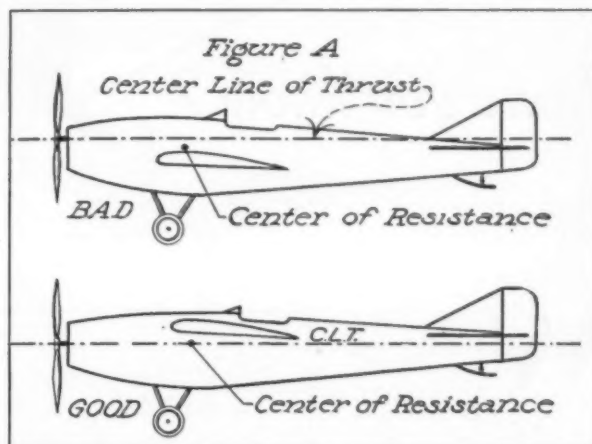
# A Course in Airplane Designing

By Mastering This Valuable Course, the Model Builder of Today Lays the Cornerstone for His Career as the Aeronautical Engineer and Designer of Tomorrow

By KEN SINCLAIR  
*Article 2.*

IN presenting this course, MODEL AIRPLANE NEWS wishes to stress the fact that model building is more than a mere sport. If the builder of model airplanes learns the fundamental principles underlying airplane flight and designing, he prepares himself for a future career in the most profitable phase of aviation.

The policy of MODEL AIRPLANE NEWS is not to encourage or teach its readers to become pilots, but rather to become aero-



**S**TABILITY is very necessary for the success of the model airplane. Without it—and some are without it—the ship cannot fly. The first gust of air sends it crashing to the ground, or into a stall which ends in a crash. As I told you in the first article, the model airplane has a hard job of it. It must regain its normal flight attitude after hitting a bump without a hand on the controls. More than that, it must have a normal flight attitude.

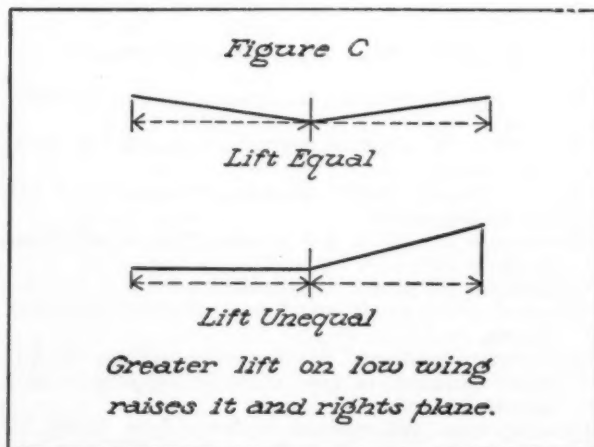
The model must be

stable in three ways: First, it must neither nose up nor down too much. Second, it must fly with wings level. Third, it must not skid or turn without banking. We will take up each of these separately.

The first is probably the most complicated of the three. Many different forces can enter here, each contributing its effect, good or bad, to the stability of the ship. Some of the most important of these, from the model maker's point of view, are shown in the diagram.

As is shown in Figure A, the center line of thrust is a line that represents the direction of the thrust set up by the propeller. If this line passes above the center of resistance of the ship, the plane will usually tend to nose down when the power is on and to stall when the motor stops. Obviously, this is an objectionable condition. The proper placing of the wing and the elevator angle can do some good in this case, but the safest thing to do is to design the ship so that the center line of thrust nearly coincides with the center of resistance. Methods of doing this will be discussed later.

Another important point to note is that the prop shaft must lie in the line of flight. If it points up, the ship will climb excessively when the power is on and dive excessively when the power is off. If it heads down, the conditions will be reversed. These are perhaps the most important things bearing on this type of stability that affect the model builder. There are many others, some of which (Continued on page 53)



nautical engineers, designers, salesmen, manufacturers, or equip themselves for any other positions which require the training of the specialist or executive. Study this course from month to month, master it in every detail and you will gain a fundamental knowledge of the how and why of airplane design which will be second to none.

THE EDITOR.

# MACFADDEN AVIATION ADVISORY BOARD

*Don't you know?*

*Ask us!*



**W**ITH the exception of one or two Chinese landings (One Wing Low), virtually every one of our hundreds of readers who wrote during the past month made a perfect three-point landing with their questions. The majority were greatly interested in the recent Schneider Cup Race, in which new world's speed records were established, and asked for a description of the machine. So here goes.

The plane which won the Schneider Seaplane Trophy at Calshot, Southampton, England, this year was a Supermarine S-6 monoseaplane equipped with a special Rolls-Royce engine and piloted by Flying-Officer W. H. D. Waghorn, British Royal Air Force. His average speed for the race was 328.8 miles an hour. One lap he covered at 368 miles an hour.

A few days later and in the same machine, Squadron-Leader A. H. Orlebar, Royal Air Force, created a new world's speed record of 357.7 miles an hour. The previous record was 318.4 miles an hour, established by Major di Bernadi of Italy in the Machi-Fiat monoseaplane he used in the 1927 Schneider Cup Race at Venice, Italy.

The Supermarine S-6 is a modified type of the plane which won the Schneider Trophy at Venice and is a low-wing braced monoplane job. The wing section is bi-convex and of medium thickness. The wing is constructed of wood and consists of two spars and normal ribs, except for wider flanges necessary to secure the fixings for the wing radiators. The fuselage is oval and of metal monocoque construction, built up of a number of closely spaced transversed formers covered with sheet duralumin.

The plane is fitted with a monoplane type tail unit and the fin is built integral with the fuselage, and all controls are internal. It is fitted with two long, single-step streamline floats of duralumin. The center section of the starboard float is built to carry a petrol tank of steel and this slight overbalancing is made up by the whole chassis being slightly offset.

The radiators are fitted to the wing and there is an auxiliary gravity fuel tank in the fairing of the star-

**E**ACH month the Macfadden Aviation Advisory Board will endeavor to answer all questions concerning model building and aviation in general. Address all questions to

The  
Macfadden Aviation Advisory Board,  
MODEL AIRPLANE NEWS,  
1926 Broadway,  
New York City.

Enclose with your letter a self-addressed and stamped envelop to facilitate an answer, as space is limited and all letters can not be answered in these pages.

board cylinder block. The plane can carry fifty-five gallons of gas. The pilot's cockpit is situated over the trailing edge of the wing.

It must be understood, of course, that these machines are built especially for the Schneider Trophy Contests, are constructed in secret and few, if any, dimensions that matter are made known to the public. In this case, for instance, it is known only that the wing span of the Supermarine S-6 is somewhere in the neighborhood of 26 feet, 9 inches with a wing area of 115 square feet.

Now we will continue with the feature started last month—the types of airplanes used during the World War by both the Allied and Central

Powers. The names of the "Aces" are being prepared.

## British War Planes—continued

- Fairey type 3B seaplane, sea bomber, 260 h.p. Sunbeam motor
- Fairey type 3C seaplane, reconnaissance, 360 h.p. Rolls-Royce motor
- Fairey "Hamble Baby" seaplane, reconnaissance, 110 h.p. Clerget engine
- Grahame-White E.IV, day bomber "Ganymede", three Sunbeam Maori 270 h.p. each
- Martinsyde F4 fighter, Hispano-Suiza 300 h.p. engine
- Martinsyde F3, single seat fighter, Rolls-Royce engine, 275 h.p.
- Nieuport "Nighthawk" fighting scout biplane, 320 h.p. A.B.C. Dragonfly engine used for fighting, airship destruction and convoying
- Handley-Page twin-engined biplane, Type 0/400 for night bombing, two Rolls-Royce Eagle VIII engines
- Handley-Page four-engined biplane V/1500 for night bombing, four Rolls-Royce Eagle VIII engines
- Parnell "Panther", two-seater reconnaissance ship airplane for flying off carrier or cruiser, 200 h.p. BR2 engine
- Phoenix "Cork" flying boat, twin-engined for submarine patrol, two 360 h.p. Eagle Rolls-Royce engines
- Sage I biplane for bombing, two 190 h.p. Rolls-Royce engines

(Continued on page 52)

# How to Build a J. D. Tractor

**A Lot of Fun  
with an  
Inexpensive Model  
That Is Easy  
to Construct**

**B**EFORE you start work, study the drawings and photograph very carefully. When you are sure that you have absorbed every detail of the indoor tractor, you are ready to start. Be sure that you have the necessary material on hand.

## Fuselage

**S**TART with the body, or fuselage, first. Take your  $1/8'' \times 5/16'' \times 12\ 1/2''$  piece of balsa. At the front end affix the thrust bearing with ambroid. Measure  $6\ 1/2''$  back and then ambroid the can as shown in drawing. Four inches back ambroid on the motor hook. Now set the fuselage away to dry.

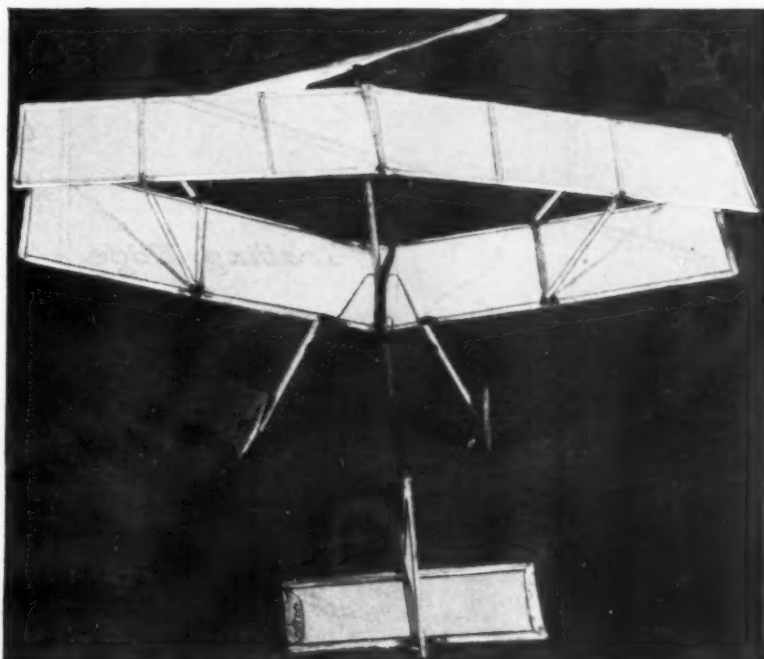
## Lower Wing

**T**AKE two strips of balsa  $1/16'' \times 1/16'' \times 12''$  and lay them out to make the wing. Space the two strips  $2''$  apart. Now cut off strips for the ribs from another strip  $1/16'' \times 1/16'' \times 50''$ . Be sure to make them  $2\ 1/2''$  long. To allow for the curving of the rib make the ribs are shaped by steaming or heating. Now cut them down so they fit and ambroid them, one at each end. Then  $3''$  from each of these place another rib. Set a weight on each wing and let dry for about one-half hour.

After the wing is perfectly dry, slip a razor blade underneath. When it is loose from the bench, cut the wing exactly in half. Set both half-wings on blocks, or something that will give your wings a  $1\ 1/2''$  dihedral. Ambroid the cuts after you have set the wings and then place the center cambered rib and ambroid it with a few drops. Let this dry for one hour.

## Upper Wing

**T**AKE two pieces of balsa  $1/16'' \times 1/16'' \times 12''$  and lay them down flat. Now make the ribs—you'll need seven for the upper wing—the same way as you did in



## Necessary Material

1 strip	balsa	$1/8'' \times 5/16'' \times 12\ 1/2''$
4 strips	balsa	$1/16'' \times 1/16'' \times 12''$
1 strip	balsa	$1/16'' \times 1/16'' \times 50''$
2	copper washers	
1 foot	music wire	No. 6
1	thrust bearing	
1 sheet	Japanese tissue	
1 bottle	ambroid	$1/2$ oz.
2 feet	flat rubber	$1/8''$
1 bottle	banana oil	

**Plans on Pages 38 and 39**

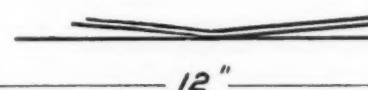
the lower. Place a rib at each end of the wing, measure  $2''$  from that end and place another rib and measure off  $2''$  again, placing another rib. Follow the same procedure on the other half-wing. Now set that to dry for one-half hour.

After wing is perfectly dry, remove it from the bench in the same way as the lower wing. Cut it exactly in half. Set the wings at a sweepback angle of  $1''$ . The best way to do this is to place an object at the leading edge in the center of your wing before you begin to set your wings back. Measure back  $1''$  from the end rib. That would be one-half the length of the rib. Mark this. Place an object at this  $1''$  mark at both half-wings. Now move the wing

back until the leading edge of the wing is even to the  $1''$  mark. Now get two blocks  $1/2''$  high and carefully lift one wing and lay it on the block to give it dihedral. Follow the same instructions on the other half-wing but at the same time keep that sweeping angle. This requires care. Now ambroid the cut in the center and then place the center rib there. Now you have sweepback and dihedral in one operation.

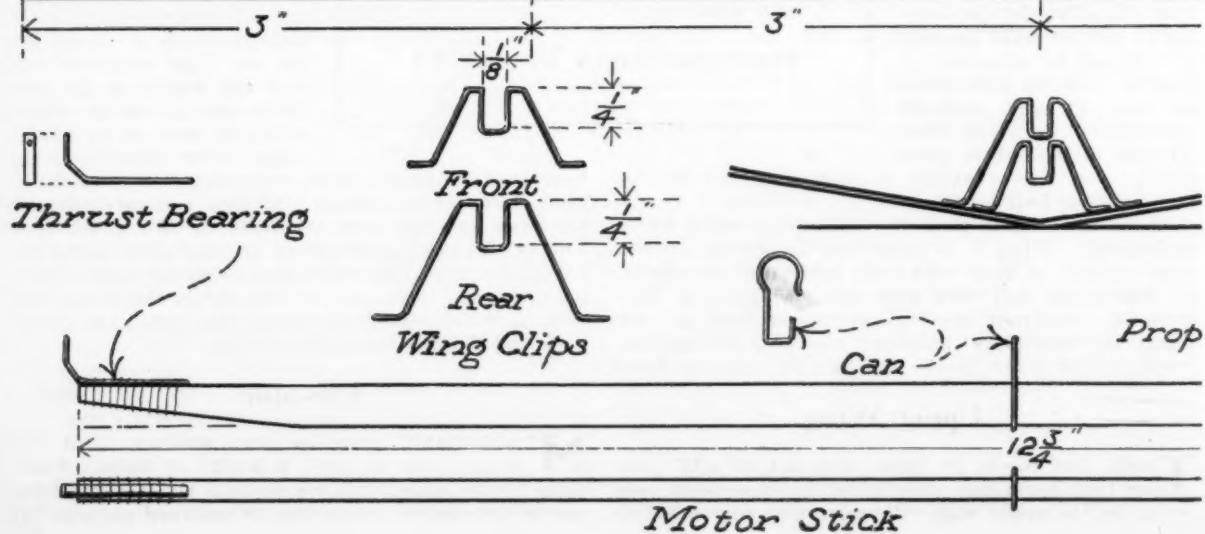
## Elevator

**M**EANWHILE work on your elevator. Cut two strips  $1/16'' \times 1/16'' \times 3\ 1/2''$  of balsa. Place them  $1\ 1/4''$  apart. Cut five strips  $1\ 1/4''$  long and put one in the center. From the (Continued on page 54)

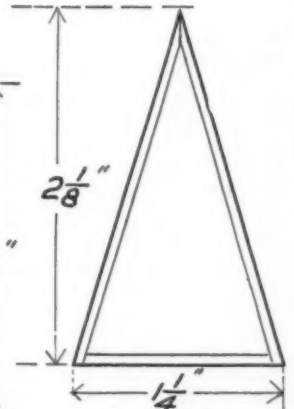
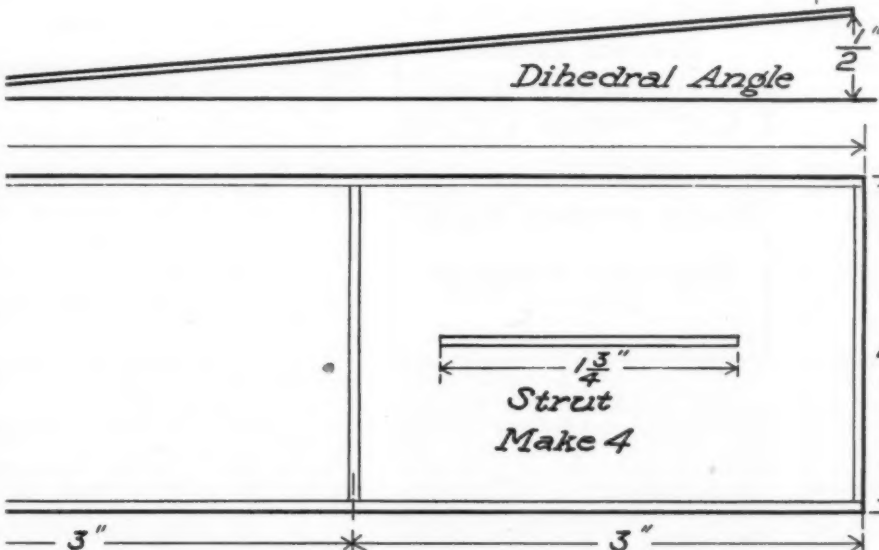
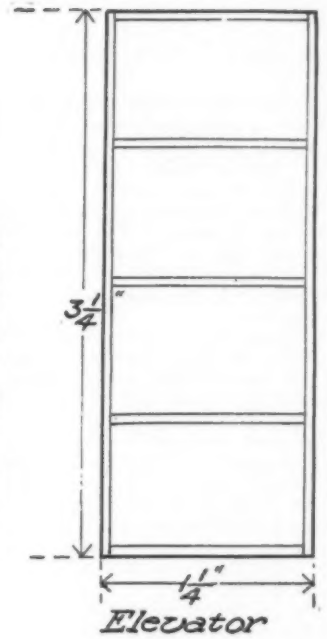
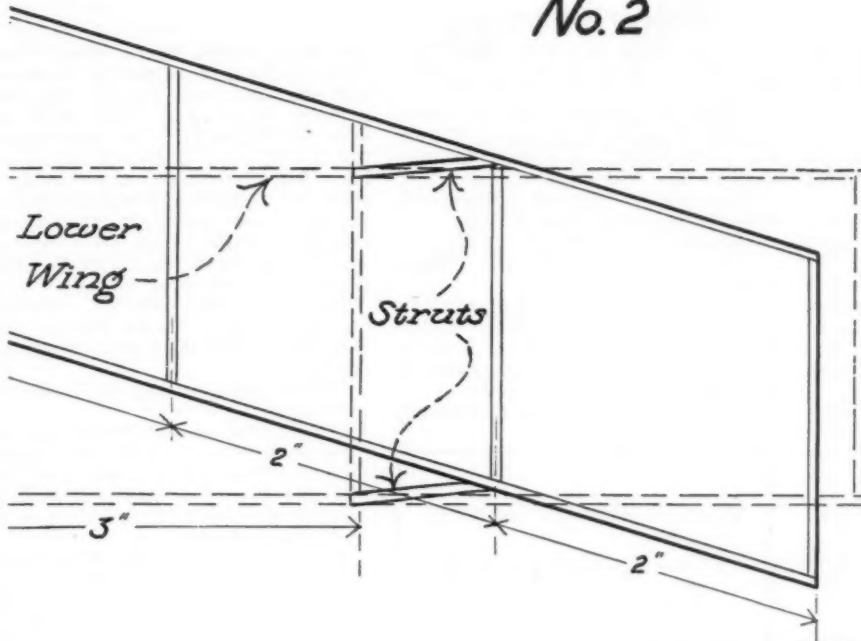


*All frames of wings, elevator and rudder are made of  $\frac{1}{16}$ " square Balsa.*

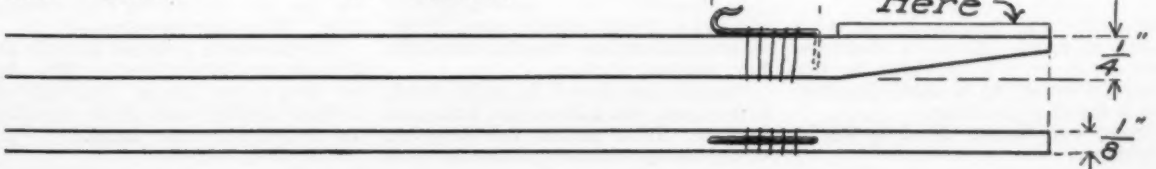
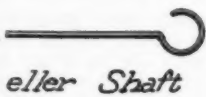
### Lower Wing



No. 2



to be Ambroided to Elevator



## The Golden Swamp

(Continued from page 34)

dugout close to her. Squint and Fred rose and leaped aboard the larger craft. Squint called sharply.

"Dave! Bert! Lew!"

There was no reply. Squint moved toward the tiny cabin in which the three boys had taken turns sleeping. Fred was at his heels.

"No one here!" Squint muttered. "Seems to me *some one* would have stuck—"

Fred moved toward the table and lifted first one canteen, then another. He turned them upside down, but no water dripped out from them. His face was very grim as he turned toward Squint.

Squint was beside him instantly. It took only a few seconds for him to make a swift inspection of the twenty-eight-footer's galley. He stared into Fred Lane's eyes.

"No food—no water!" he muttered in a low voice. "That's where they went, Fred, through the mangrove into which they ran the boat. And they went for food—and water!"

FRED nodded. The gun-rack in the cabin was empty. He pulled open the drawer in which they had planned to keep the ammunition. There was not a round left.

"Low in shells for their rifles!" he muttered. "Squint—we'd better follow them!"

Brent Faber nodded. "We'll fill the canteens with fresh water," he stated. "And we'll take along a tin of food. Charlie can lead us in; he'll know the best way to follow. There must be solid ground or the sort of surface over which they could travel. And if *they* went through—we can go through. Come on!"

Once more on deck, he explained to the Seminole. Charlie listened, his face expressionless, until Squint spoke of there being no food and no ammunition on the boat. Then he thought he detected a faint glitter in the Indian's eyes. The Seminole grunted.

"We follow quick!" he muttered. "It come dark soon. Bad in Glades when she dark."

Fred filled the canteens with the fresh water they had brought from the plane. Squint saw that the setting sun was already turning the waters from gold to black again. He got the tin of food, much of it concentrated stuff of the emergency variety.

It was difficult to keep up with the Indian. He moved swiftly, with a peculiar grace which enabled him to save breath and much wasted effort. Squint and Fred were breathing heavily within a few minutes.

Suddenly the Indian halted and raised a hand. From a distance they could hear a crashing in the foliage, a crackling of small brush—and a heavier thudding.

"Some one there!" Fred spoke in a whisper.

The Seminole grunted. "Big!" he muttered. "No bird—no snake. Mebbe cat!"

"Cat!" Squint repeated the word grimly. Fred was staring at him in the semidarkness, a puzzled expression on his face.

"Panther!" Squint breathed.

"Watch yourself, Fred!"

Charlie lifted a hand.

"We go on!" he stated. "Boys come here—see trail!"

Squint nodded. He had already noted the trampled condition of the foliage and the broken roots beneath their feet. The crew of the *Betty G* had come this way, all right.

The broken trail turned abruptly,

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a short distance ahead. Suddenly the crashing sounded almost upon them, the breathing was close. The three waited, tense.

"Lew Collins!"

It was Squint who cried out and then leaped forward. Lew Collins it was—one of the lost three!

"Squint! Fred!" Collins uttered the words hoarsely. "You got here! We heard you up above. We used our last ammunition trying to—"

They were gripping each other's arms and hands. Fred stared at Lew's mud-stained face.

"How about some water?" Lew muttered hoarsely. "I'm pretty near all in!"

THEY gave him water from one of their canteens. The Seminole stood with his arms folded, watching Lew closely. There were a lot of questions both Squint and Fred wanted to ask, but they waited until Lew grinned at them.

"Here's the dope," he said, "and, believe me, you fellows got here just in time. Dave caught the dropping of the barometer and put the *Betty G*

into what looked like a river. The storm broke just as we got inside—and she was some storm! We got anchors down and they held us through the night. The next morning we started out—and we were lost. The river wasn't any river and, when we navigated by compass, heading west, we ran right up against mangrove walls. We'd hit a stream and be all right for maybe a half-mile. Then we were blocked."

The Seminole grunted. Squint smiled grimly. Fred's father had told them about the trickiness of the Glades.

"White man no can do!" Charlie said slowly.

"I'll say we couldn't!" Lew agreed. "We were low on food and water, anyway. The second night went by. We had plenty of gas and cruised around, getting nowhere. We were badly lost and—"

Lew Collins broke off. "Come on!" he muttered. "Dave and Bert are in there." He pointed through the growth of the Glade. "And there's a wounded panther. I'll talk as we go. I heard some one calling—"

HE led the way, with the Seminole close behind him and Squint and Fred following.

"We just kept getting up against blank walls of mangrove with the *Betty G*," Lew went on, moving slowly along a beaten trail through the growth. "If we had depth, we moved. Two Indians came along in a canoe this morning. We'd run up on the bank back there and were planning to go after some birds Bert had seen take wing back in here some place."

"The two Seminoles had Dave's sweater," Fred muttered. "We spotted it from above."

Lew nodded. He paused, listened, then led the way on again.

"Dave traded it for water—an earthen pot of it; not much, but it helped. They said they'd go out and find the way to the coast and that was the last we saw of them. They—"

"No good Indians!" The Seminole spoke hoarsely. "Me see them two day ago. Bad fellows!"

Squint nodded. They were moving slowly now, carefully.

"Bert wounded the panther," Lew was muttering. "He surprised us—the cat did. We'd fired volleys of shots to attract you fellows, up in the sky, but I guess you couldn't spot the smoke. It's so thick with jungle stuff. I'd used up my last shells. Dave used his last two on the cat after Bert had wounded him. We're getting close—"

The Seminole grunted sharply and Squint was silent again. The four of them moved along. Suddenly the Indian halted and half crouched. He raised his right hand.

"Me hear noise—"

The panther screamed again fiercely. The Seminole lifted his rifle and Squint moved slightly to one side and raised his automatic. His heart was pounding. Dave and Bert were somewhere beyond them, somewhere near the wounded cat. And they had no ammunition!

There was a sudden crashing, off to the left and ahead. A voice cried out hoarsely.

"Dave!" Lew shouted. "This way—"

His voice was smothered in the fierce scream of the wounded cat. It came from directly ahead of them; its eyes glowed greenly. Squint shouted with all his strength.

"Dave—down! The panther! He's—"

Then the wounded animal leaped. Even as the body catapulted through the air, the Seminole's rifle cracked. Squint's automatic cracked a second after it as Dave threw himself forward and to one side.

The panther dropped heavily, its body writhing in the marshy growth. Dave Brown got slowly to his feet. From the growth back of him, another figure came—Bert Kane's!

Squint, with Fred and Bert, moved toward their other two comrades. All of them were talking excitedly, eagerly. It was a great reunion, the five comrades hugging and slapping each other in the last golden glow of the day, near the stretched body of the dead panther.

**S**QUINT was at the controls of the DeHaviland; the ship was winging westward over the Everglades. He stared over the side of the cockpit and watched the *Betty G* moving slowly in the channel below.

The pilot of the D. H. spoke through the mouthpiece of the phone-set. He grinned as he spoke.

"Fair exchange, Fred! We got gas and oil from them; they got food and water from us. We got the panther skin—and they've got Charlie—until they hit the coast."

"And the Seminole—he gets an automatic and some shells," Fred said. "He's tickled with 'em. Charlie's a good Indian."

"We arrived just about in time, Fred," Squint stated more soberly. "Things looked pretty black for the fellows."

Fred Lane nodded. He stared down over the rear cockpit side at the twenty-eight-footer far below.

"They looked black, but Dad always said the Glades were more golden than black, Squint. And that's what they were last night!"

Squint nodded and relaxed in the cockpit. The DeHaviland was winging steadily through the warm sky. Her engine sang a cheerful song.

"We'll give the Glades the benefit of the doubt Fred," he called back through the phones. "We'll call all this stuff below—the Golden Swamp!"

Tommy Lane in the rear cockpit, chuckled grimly.

"So be it!" he returned solemnly.

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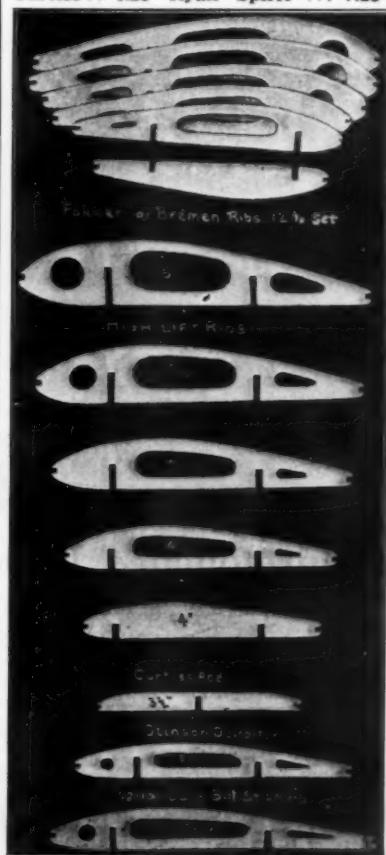
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## How to Build a "Robin" Scale-Model

(Continued from page 13)

### Top of Fuselage

We will now cut out from 1/16" balsa sheet the front top piece as shown in drawing 4 and the balsa strip L, also one small block 1/4" x 1/4" x 1/4" and cut diagonally, forming two small triangular blocks 1 1/4" long. These two pieces are ambroided inside the fuselage at point P as shown in drawing 4. Before putting on the front top of fuselage we must make up two fuselage rib base blocks B, as shown in drawing 2, from 1/4" x 1 1/2" x 7" piece of balsa. One of these blocks is right and the other left. From this same piece of balsa we make up our landing-gear shock absorbers as shown in drawing 13. The fuselage rib bases B are now fastened to the sides of the fuselage in their respective positions as shown and noted in drawing 1, two pieces of aluminum tubing size 1/8" inside diameter, and 3/16" outside diameter, by 2 5/16" long, after being slightly bent upward so that the ends are 1/32" above center.

This is done so that when the wings are slipped on they will have

a dihedral angle of 1.5 degrees. Fasten these tubes into place with ambroid being sure that the ends are flush with the outside of fuselage rib base. The front top piece is now cut and fitted into place with pins and ambroid. After drying, the entire fuselage is sandpapered until all joints and corners are smooth. The motor cowling is shaped with sandpaper and a razor blade may be used to trim down the small edges of the balsa pieces. After sandpaper has been used you will find all your surfaces are very smooth and you can not see where any of the balsa has been joined. Piece designated by L in drawing 4 is next set into place and sandpapered down so that seams will not show. The construction of the fuselage is now complete except for window trimmings, etc., which may be installed later.

### Motor Stick and Motor Nose

The motor stick is made from a piece of 1/8" x 1/4" x 15" spruce as shown in drawing 5, the propeller bearing being fastened on with thread and ambroid and the rear

### Necessary Materials

3 sheets	1/16" x 6"	[x 36"	featherweight balsa	formers, etc.
3 pieces	1/8" x 1/4"	x 14"	balsa	leading edges
4 pieces	1/8" x 1/16"	x 15"	balsa	trailing edges, etc.
2 pieces	3/16" x 1"	x 7"	balsa	rear wing struts
2 pieces	3/16" x 3/4"	x 7"	balsa	front wing struts
2 pieces	3/16" x 1/8"	x 36"	balsa	wing brace struts
2 pieces	1/8" x 1/8"	x 36"	balsa	misc. struts, etc.
2 pieces	3/16" x 3/16"	x 36"	balsa	landing gear struts
1 piece	1/4" x 1 1/2"	x 7"	balsa	shock absorbers, etc.
1 piece	1/2" x 1/4"	x 2"	balsa	control streamline
3 pieces	1/16" x 1/16"	x 36"	balsa	window frames, etc.
1 piece	3/8" x 3/8"	x 1 1/4"	balsa	P block]
4 pieces	1/8" x 15"		round wood	wing spars
1 piece	1/16" x 1 1/4"	x 1 3/4"	spruce	No. 7 former
1 piece	1/8" x 1/4"	x 15"	spruce	motor stick
1 piece	1" x 2"	x 2 1/4"	balsa	nose block
1 foot	1/16"		reed	aileron control
1 spool			annealed wire	control cables, etc.
4 feet	No. 14		music wire	fittings, etc.
1 pair			celluloid	wheels
1 piece	6" x 6"		sheet celluloid	windows
2 pieces	3/16" O. D. 1/8" I. D.		aluminum tubing	wing connectors
1 piece	1/8" O. D.		aluminum tubing	tail skid
1 piece	No. 34 1/2" x 12"		sheet aluminum	wing straps
1 piece	3/4" x 1 1/2" x 8"		pine	propeller
1			thrusting bearing	
2			copper washers	
2 sheets	20 1/4" x 24 1/4"		Japanese tissue	
1 bottle	1 oz.		ambroid	
1 bottle	1 oz.		banana oil	
1 bottle			A. A. C. orange dope	
1 bottle			A. A. C. yellow dope	
1 bottle	2 dram		silver dope	
1 bottle	2 dram		black dope	
1 bottle	1 dram		Roman blue dope	
1 pkg.			small pins	
1 pkg.			snap fasteners	
10 feet	1/8"		flat rubber	motor

hook and can be made from No. 14 piano wire as shown in the same drawing and is also fastened with ambroid 1" from the back end. Now take a balsa block 1" x 2" x 2 1/2" and cut the motor-mount nose piece to the shape as shown in drawing 8. After this is done take the motor stick and insert it in the square opening that you have made for it and fasten it with ambroid, making a good tight joint. Regular dress snap fasteners are used as shown in drawing 6 to hold this motor-stick mount to the main fuselage so that the stick can always be removed from the ship when it is necessary to wind up the rubber motor.

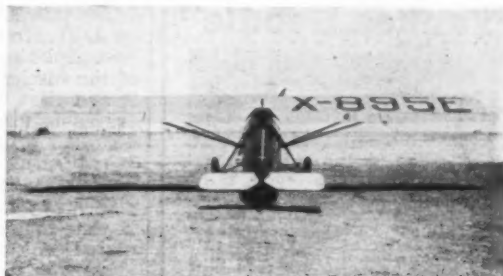
### Wings and Ailerons

In the wing construction we must use 14 ribs, cut to the shape as shown in drawing 9. The ribs are then laid out on the workbench and the 1/8" round-wood spars are inserted through the spar holes in the wing ribs that have been cut for that purpose. The ribs are spaced as shown in the drawings 10, 11 and 12. Be sure to cut off the four ribs at the place to which the ailerons are fastened. These tips are used in the construction of your ailerons. The leading edge is made from 1/8" x 1/4" balsa 13 15/16" long and the trailing edges are made from 1/8" x 1/16" pieces. These leading and trailing edges are all ambroided into place and a piece of bamboo 1/16" thick is used to make the wing tips as shown in drawings 10 and 12. The main spars, which are fastened to this bamboo strip, are shaved down so that they are even with the bamboo strip. The ailerons are made in the same manner as the wing with the same size leading and trailing edges. The aileron controls are made from the 1/2" x 1/4" x 2" piece, cut to shape as shown in drawing 9 with pieces of 1/16" reed imitating rod control. These controls are not put on the ship until after the wing has been completely covered with the Japanese tissue.

### Tail Surfaces

The tail surfaces are built up differently from the wing as you will note in the drawings 7 and 8. First select the necessary balsa and cut to size all the necessary spars, leading and trailing edges for the stabilizer and elevators as shown in drawing 7. After this has been done you can cut some bamboo to the lengths described and with ambroid construct this member of the tail-surface group. The small edges, marked D and C, are of balsa and the strips marked E are made from bamboo as shown in drawings 7 and 8. The rudder is made up in the same manner and can be constructed as outlined in drawing 8. Small straight pins bent with loops on the ends can be used as hinges. The entire tail surfaces are then fastened to the fuselage with the aid of both pins and ambroid.

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## Tail Skid

The tail skid is made from a piece of 1/8" aluminum tubing, the end being split so as to fit the end corner of the fuselage, as shown in drawing 2, and then bent to shape. A small eraser is used to imitate the shock absorber. After inserting the 1/8" tube through this rubber take a razor blade and cut the rubber to the shape shown in drawing 2. The tail skid is then fastened to the fuselage with ambroid.

## Landing-Gear and Wing Struts

The landing-gear is constructed from balsa wood and No. 14 piano wire, which is inserted through the balsa struts as shown in drawing 13. These struts are all streamlined and special care must be taken in the construction of the large wing struts as these two struts are cambered, as you will note. This camber is secured by sandpapering until the correct thickness and curve are obtained as shown in drawings 10 and 13. The shock absorbers are made from the balsa piece described in the making of your fuselage rib base blocks. All parts are ambroided and after they are dry you may install your celluloid wheels which have been painted black and orange, the black paint being used for the tire and the orange for the wheel disk. The two small struts are then affixed to the stabilizer with ambroid and the entire ship is left to dry.

The landing-gear struts are cut full length on one side and a piece of No. 14 music wire imbedded and ambroided in as shown, before shaping, X is drilled to fit B; with the lower end of strut projecting 1".

## Windows

The window frames are made from 1/16" x 1/16" balsa, shaped as shown in drawing 1, and ambroided together. Next cut the celluloid to shape and glue it to the side of your ship in the correct positions as shown in drawing 1. Placing a piece of white paper underneath them, ambroid the window frames on top of these celluloid windows and leave

them to dry. This will complete all your windows and window frames.

## Propeller

The propeller is carved from a pine block size 3/4" x 1 1/2" x 8", which is shown in drawing 9. This propeller can be sandpapered down to a very fine finish, being careful at all times not to spoil the center marking, where the hole is drilled for the propeller hook as shown in drawing 9. The end of the propeller hook comes through the center of the spinner, is bent and then stuck into the wood and held in place with a small drop of ambroid.

## Rubber Motor

The rubber motor consists of 10 feet of 1/8" rubber looped between the propeller hook and the rear motor stick hook so that there are eight strands. Then tie a square knot in the rubber and the rubber is then installed. By making a small S hook from No. 14 piano wire, it will be possible to do all the winding with a winder of the eggbeater type.

## Covering, Doping and Painting

The wings and tail surfaces of the *Robin* are covered with Japanese tissue. After the wings and tail surfaces are all covered, dope these surfaces with banana oil and set aside to dry for at least one hour. The wings are then painted with yellow dope; this dope can also be used on balsa surfaces as well as the stabilizer and elevators, the wing struts and the small stabilizer struts. The fuselage is painted with orange dope as well as the landing-gear struts, braces and tail skid. The wheels are painted black and orange. A silver strip, bordered on the edges with silver, is painted upon the sides of ship as shown. The Department of Commerce numbers are painted in black upon the upper right-hand panel and the lower left-hand panel and the small numbers are printed in black also on the top of both sides of the vertical stabilizer. The name *Curtiss Robin* is painted in Roman blue with a silver outline.

## The American Sky Cadets

(Continued from page 29)

exceedingly delicate example of expert workmanship in the form of a glider, gave his little floater a gentle push that started his model off on a flight that ended thirty-six feet away. This was more than enough to give him the honor of winning the hand-launched glider event for distance.

Then little Clayton Fish of helicopter fame fooled the bigger boys when his R.O.F. scientific insisted on continuing to circle the auditorium

until it brought home the bacon for Clayton with a nice time of three minutes fifteen seconds.

With the last event finished, the brunt of the work fell on the judges for the tournament. The judges, headed by Lieut. Walter Hinton, transatlantic flyer, included Major H. C. Davidson, U. S. Air Service, Commandant of Bolling Field; Lieuts. B. Hoppin and Lester Maitland, both of the U. S. Air Service; Lawrence Williams, chairman of the

Aeronautical Committee, Board of Trade; and Paul E. Garber, authority on miniature aircraft.

Major General Mason M. Patrick was the chairman of the Advisory Board of the tournament.

Lieut. Walter Hinton presented the awards, assisted by Miss Sibyl Baker, director of the Community Center Department, and Miss Helen Collier, who acted as recorder for the tournament.

Herbert G. Dorsey, many times a champion stepped up before a record-breaking audience to be presented with the coveted General Mason M. Patrick Trophy for all-around model building. Just read over the following records held by young Dorsey and see how many you can break this coming year: Outdoor hand-launched scientific, 14 minutes 2/5 seconds; indoor hand-launched scientific, 3 minutes 39 seconds; seaplane, 3 minutes 22 seconds; R.O.F. fuselage, 2 minutes 34 4/5 seconds; and glider for duration, 12 3/5 seconds.

Another potential sky-writer, Frank Salisbury, his face lighted by a smile, was declared junior champion of the District by reason of having aggregated the highest number of points and having the most duration to his credit.

Pilots of the Chevy Chase Model Aero Club were awarded the Committee cup for collecting 805 points over the Capitol Model Aero Club

who had 564 points to their credit. The cup was received by Ernest Stout, president of the winning club, who incidentally amassed a large number of points for his club.

Silver trophies for maximum duration were won by the following: Herbert Dorsey, Ace, Aero Club Trophy; Frank Salisbury, Class A, Exchange Club Trophy; Clayton Fish, Class B, National Electric Supply Co. Trophy; Harry McGinnis, Class C, the R. Harris Co. Trophy.

Winners in classes D, E and F respectively, were William Pizzini, Charles Ricker and Bob Wiehle. They each received special awards donated by the Capitol Model Aero Supply House.

Fifty-eight boys and three girls received the green-and-white sweater emblem with the wings of the D.C.M. A.L. for points received in the tournament.

The following boys were recommended for National competition at Louisville, Ky.: John Sullivan, Everett Meeks, Robert Towles, Clayton Fish, Sammy Walker, Robert Swope, Harry McGinnis, Harold Bruce, Douglas Bruce, Otho Williams, Ernest Stout and Joe Galliher.

The tournament had hardly finished before these intensely air-minded fellows were figuring on specifications for the models they intend building to carry away national honors.

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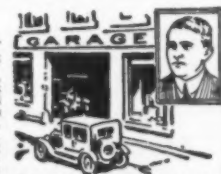
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(Drops 5 bombs while in flight)	
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## Sharks of the Air

(Continued from page 12)

had the rum shut out of this side of the island when the rum fleet took on hydros and then these fellows came along with their charming ways and began to leave us specimens of their work like the one we found last night. They provide regular banquets for the sharks. That one last night was the third one this month, about the worst so far. Sharks they must be themselves. Sharks of the air, I call 'em."

"They're sharks all right, but that doesn't make it possible for them to fly their ship down into the sea as it seemed they did last night. I'm going to take that bus the boys captured last week on Caja de Muertos and scout around for a couple of hours. That'll leave my crate ready for tonight without any special work. Adios then, Captain, I'll pick you up for the midnight patrol as usual." Vree-turn jumped to the dock.

HE checked the details of the plane, and in doing so he seemed a different individual from the smiling boyish figure which had stood at the side of the fuselage a moment before.

He swung the plane over the spot where the launch had found the rum boat and followed along the coast east, picking up as nearly as possible his course of the night before.

"This is about where my gun jammed," he said to himself. "There's Caja de Muertos. As far as I can make out, that's the island where the hydro went down."

The island he had picked out stood offshore from Caja de Muertos, westward a quarter of a mile, and was almost circular viewed from the air. About three hundred yards in diameter, it rose from the water perhaps sixty feet. On the western side, from which he was approaching, the barren cliffs broke into a shelving white coral beach on which a dozen palm trees waved their fronds over the foaming breakers.

The shore of the remainder of the circumference of the island dropped abruptly into the sea in jagged limestone cliffs against which the sea beat, throwing geysers of spray high into the air. Inland from the beach the island lay gray in the brilliant sun except for a central circle of green which seemed to be more palm tops and some smaller growth. For a moment Vree-turn fixed his gaze on this center decoration, something peculiarly stunted about the palms caught his attention as unusual, then he shifted his sight as he thought:

"It's a wonder anything grows on such a hunk of rock. Now where did that hydro go to? She went down just on the other side and when I came over and not three minutes later she was gone."

He pushed the stick forward until the plane cut over the island not fifty feet above its gray rocks,

but could see nothing to explain his problem as he peered searchingly down over the side.

As he swept past, Vree-turn caught a darker shadow in the rocky wall just at the westward end and he put the plane into a steep bank and swung close in toward the face of the cliff. Low over the water he pushed the ship, right wing nearly touching the wave-cut coral.

AS he shot his line of sight ahead from his position, he could see that the wall of the cliff was offset at the farther end and that the dark shadow which had caught his eye was a break in the cliff wall. Had he continued close along the cliff, he would have entered the opening but he had seen enough and zoomed over the sea again.

Had he seen a face peering from the foliage as he swept past?

"Don't be a fool!" he chided himself. "What you are about to decide is too goofy to be considered."

Through his mind there flashed a stream of ideas and facts: the disappearance of the hydro—the location of the island in the coral reef—the continued fruitless efforts of the day patrols to locate the base of these aerial buccaneers. Again he flew across the island, his mental powers keyed to their highest pitch.

As the plane swung directly over the green of the center top of the island, the sharp familiar rattle of a machine gun cracked from the palm trees and the fabric ribboned up from the front edge of his left wing.

"That decides it!" Vree-turn spoke aloud in a voice like a taut wire.

At once the motor of the plane cut out. It sputtered. It coughed. It backfired, coughed again and died as flashing steel-strong fingers worked at switch and throttle. The ship lost flying speed and began to sink. She wobbled drunkenly, then slipped onto her right wing, straightened out into an abrupt dive, nosing down like a plummet for the breakers just off the beach. Then she reared like a plunging steed, her speed broken by wings almost vertical against the air, and dropped to the beach crashing at the foot of the palms.

"Hated to do it," said Vree-turn easing his strained harness straps. "It was the only way though. They had me spotted sure. They'd have been gone birds by the time I'd got back with the launch. So far so good. Well, I dealt myself this hand. The next thing is to play it."

AS he spoke, there came to his ears the rapid exhaust of an outboard motor and, looking through the palms, he saw a small steel boat in which there were three men, rounding the end of the island.

The figure in the bow of the motor-boat held Wilson's attention. Though

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unable to discern details of the man's features, the very carriage of his head on broad massive shoulders, the quick impatient movements of his hands and arms as he directed the maneuvering of the boat through the breakers, gave Vree-turn the impression of unusual powers, physical and mental.

As the boat approached, the beach oars were shipped and the third man under the direction of the one in the bow, began to watch for an opportunity to ride a wave to the beach.

As the keel of the small craft cut the sand and before the receding wave could leave her stranded, the man in the bow leaped into the water, grasped the gunwale of the boat at the bow and dragged the boat and its two occupants inshore to the edge of the beach.

Here he released his hold, stepped deliberately to the middle of the boat and yanked the oarsman to his feet on the sand beside it. Then he squared away and his right arm flashed in a short, quick jab which laid the oarsman limp on his back across the boat. Without so much as a glance at the result of his blow, the man turned, gave a sharp command to the remaining member of his crew, and headed for the wrecked plane.

As he crunched his way across the shell-strewn beach toward the wreck, Vree-turn had opportunity to examine him closely. Of less than medium height, his stature was further shortened by the great breadth of his shoulders. A large head set on his neck so that it thrust forward, chin overhanging the muscled arch of his chest.

HIS long heavy arms swung at his sides as he strode through the soft sand of the beach without effort, though the man behind him was puffing and grunting with exertion. As they drew near, Vree-turn saw an automatic held ready by the second of his captors. The first seemed not to be armed, at least he made no motion to produce a weapon as he approached.

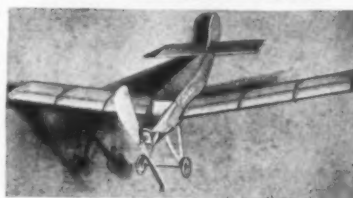
As the two reached the side of the wrecked plane, Vree-turn found himself under the burning gaze of two eyes which seemed to have no color.

"If you're not hit get out!" A voice as harsh as sharkskin rasped through the protruding teeth with scarce a movement of the hard lips.

Without shifting his glance, Vree-turn sprang the catch on his straps, pulled himself up in the seat and dropped to the beach directly facing the heavy form of his captor. Neither man moved nor spoke for ten seconds, during which the muzzle of the automatic in the hand of the third man was pointed at Vree-turn's heart.

What fate is in store for Vree-turn? Does failure beset him on his great adventure? Don't fail to follow the thrills and dangers of this bird-man. Be sure to read the next issue.

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ANOTHER super-accomplishment by Eagle designers. A practical duration low-wing model with two important features never before offered in any model design. First—the model is so designed that it has absolute stability at all times. Second—a brand new balance control is incorporated in this model which allows the operator to adjust the model for all types of flights, according to atmospheric conditions, such as high winds, low winds, etc. Flight performance is exceptional, inasmuch as this model under average conditions will gain altitude rapidly, then level out and fly for exceptionally long distances.

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DEPT. F-2 NORTH HAVEN-CONN.

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Five (5) Flying Airplanes for \$2.00 That Perform Like the Real Thing! Not construction sets but newly assembled Planes. Guaranteed to fly.

- 1) **LONG EAGLE BOMBER**—28 inch non-breakable Wing—7 inch aluminum Propeller—shock absorbing Landing Gear—300 ft. flight—weight 3 1/4 oz.
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- 3) **LONG EAGLE STUNT**—16 inch Balsa Wood Wing—4 3/4 inch metal Propeller—150 ft. flight—weight 1-3 oz.
- 4) **GREAT EAGLE GLIDER**—16 inch non-breakable Wing—cabin type Fuselage—no Value.
- 5) **LONG EAGLE STUNT GLIDER**—12 inch Balsa Wood Wing—cabin type Fuselage—does all stunts.

Each Set in individual Boxes, all packed in one shipping carton. Complete with interesting instruction Booklet.

All Five (5) for \$2.00

Buy from your local dealer. If not in stock, order from us.

We pay postage.

Aircraft Model Div.—Wilder Mfg. Co.



703 N. Main St.

St. Louis, Mo., U.S.A.

## The Air Goin' Navy

(Continued from page 7)

each class of naval aircraft has a distinguishing letter—in short, an abbreviation. For instance, a battleship is BB, a light cruiser is CL, and so on.

In naval aviation the letter "Z" refers to all lighter-than-air craft. The dirigible *Los Angeles* comes under this heading, of course. "V" is the class abbreviation for all heavier-than-air squadrons. After "V" comes a key letter indicating what kind of squadron, a squadron number, and a third letter indicating the fleet to which that particular squadron is attached. For instance, VF-1B means, Fighting Plane Squadron Number One attached to the battle fleet. The expression VT-9S, means Torpedo Plane Squadron Number Nine attached to the scouting fleet.

The classes of squadrons with their key letters are as follows:

- VF—Fighting
- VB—Light bombing or strafing
- VJ—Transportation and general utility.
- VM—Marine expeditionary
- VN—Training
- VO—Observation
- VP—Patrol
- VS—Scouting
- VT—Torpedo and heavy bombing
- VX—Experimental

Aircraft designs and types are changing continually so that some method of logical numbering must be resorted to in order to distinguish the various models. Some manufacturers use a trade name for a particular design. Examples of this are the Curtiss *Hawk* and *Falcon* and the Vought *Corsair*.

The navy, however, uses a system of lettering and numbering that shows clearly the relationship between various planes. At first appearance, this system greatly resembles a cross-word puzzle, but upon a second glance, it becomes simpler.

The plane designation tells the class of plane, the model number, and the manufacturer. The key or class letter remains as above for the type of squadron; that is, F indicates a fighter while T indicates a torpedo plane. Next comes the model number and last comes the letter indicating the manufacturer.

**E**XAMPLES of plane designations are: F3B-1. This refers to the third model of fighting plane built by the Boeing Airplane Company of Seattle. The final number "one" indicates that no major alteration has been made to the original design. The expression F3B-2 designates the third model of Boeing fighter with a major alteration, perhaps a different type of engine has been installed in the group of planes under this classification. The F3B-3 is the same plane with perhaps a third type of engine or a different wing section.

The O2U-2 is a modification of the second model of observation plane manufactured by the Chance Vought

Corporation of Long Island. In this case, the variation consists of several refinements.

The T4M-1 is the fourth model of torpedo plane manufactured by Glenn L. Martin Company formerly of Cleveland. The model has not, as yet, been modified.

The manufacturer's designating letters are as follows:

- A—Atlantic Aircraft Corporation
- B—Boeing Airplane Company
- C—Curtiss A. & M. Company
- D—Douglas Company
- H—Hall Aluminum Aircraft Corporation
- K—Keystone Aircraft Corporation
- L—Loening Aeronautical Engineering Corporation
- M—Glenn L. Martin Company
- N—Navy Department design
- Q—Fairchild Aviation Company
- R—Ford Motor Company
- S—Sikorsky Manufacturing Corporation
- U—Chance Vought Corporation
- W—Wright Aeronautical Corporation
- Y—Consolidated Airplane Corporation

**T**O make identifications in the air easier, each squadron has its control surfaces painted a different color. For instance, VF-1B squadron has red tails, while VF-2B squadron has green tails.

Squadrons are divided up into tactical groups of three planes each, which unit is called a section. In order to promote a quicker rendezvous in the air each section leader has a broad band painted around his fuselage.

The status of naval aviators is generally unknown to civilians. Though they are doing a specialized work for the moment, nevertheless, they are regular naval officers in exactly the same status as those who man the surface vessels. The majority of naval aviators are Annapolis graduates, though a good many of the World War aviators are still in the service.

Before an Annapolis graduate can attend the flight training school at Pensacola he must serve eighteen months aboard a battleship or destroyer. This is in order that he may get an all-around view of his chosen profession. Here he can get a knowledge of gunnery and engineering. He will also learn the uses and limitations of vessels. In an emergency he could take his place aboard ship in a gun turret or in the engine room.

All of this will help him, too, when he is scouting and has found the "enemy". He will be able to recognize the types of ships, their probable speed, approximately what armament they possess, and their probable intentions as indicated by their formation.

Again, when this officer is flying high over the "enemy" line "spotting" his own gun-fire he can visualize and

appreciate the problems that are facing the personnel aboard his own ship. If one shell is constantly falling short, he can judge whether or not to use it in his calculations. In all ways this experience aboard vessels in the fleet will be invaluable to the future aviator.

At Pensacola the embryo pilot learns to fly primary types of land and seaplanes. This includes all branches of flying such as acrobatics, emergency landings, cross-country, ground school and gunnery.

After successfully passing the primary course the student receives his coveted wings. With this goes the privilege of wearing a soft leather helmet instead of the hard "crash" helmet that has given him so many headaches. At this point the student's head probably wouldn't fit inside a non-flexible helmet due to its sudden expansion.

The young aviator then receives the advanced courses in service type of planes. This includes training in observation, torpedoes, and fighting plane tactics. From here the pilots are assigned to various operating squadrons throughout the fleet. By this time the student will have had not less than 250 hours in the air, though he will, under pressure, admit that he is as good as the average 2,000 hour pilot.

Enlisted men are also sent through the flight school and receive a course very similar to that given officers. The percentage of those successfully completing the course is less, however.

**C**IVILIANS are given primary training at the Reserve Stations and if successful, are commissioned ensigns in the Naval Reserve. The latest policy is to send these reserves to Pensacola for advanced training. From fifty to 100 of these officers are sent to the operating squadrons in the fleet each year for one year's active duty.

These reserve officers and the enlisted men who have received flight instruction and who do not re-enlist in the service form a generous supply of pilots for the commercial aviation world. Thus the navy provides an important training school for American aviation.

During the year at least one cruise will take place. If, on these cruises landplanes continue to fly further and further away from the fleet, the merchant sailors are due for a life of thrills and surprises.

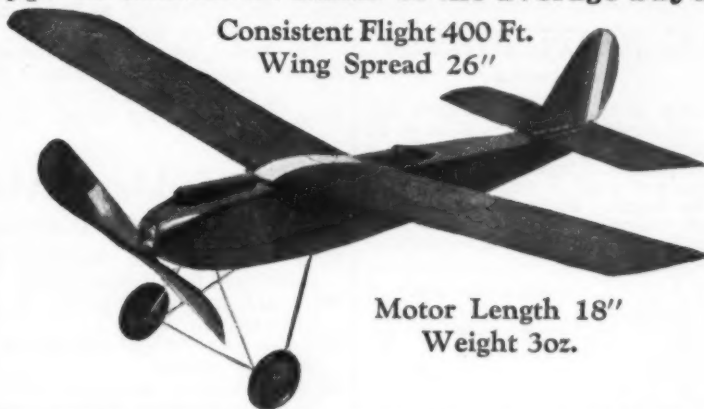
Strange indeed must have been the thoughts of a crew of merchantmen headed for Panama during the past winter. They could hear a muffled buzzing and humming. It was a most unaccountable noise for, though the sky was filled with broken patches of fat, wooly clouds, the weather was all that could be desired.

Suddenly the buzzing turned into a roar which gradually merged into a screaming and howling. Nothing short of a typhoon could stir up such

## Grant Challenger Scout

Guaranteed to outfly all other planes of same type on market in hands of the average buyer

Consistent Flight 400 Ft.  
Wing Spread 26"



Motor Length 18"  
Weight 3oz.

PERFECTLY BALANCED in flight, this Challenger Scout makes very flat glide and beautiful easy landing.

PATENTED WINGS allow instant adjustment for Flight Control. UNIVERSAL JOINT insures against breakage upon striking objects in flight. Many other new features. DESIGNED by Chas. H. Grant, maker of the famous Silver Arrow Planes, and special lecturer on models at the Guggenheim School of Aeronautical Education, this Challenger Scout is the most durable plane obtainable.

Very simple to build. COMPLETE INSTRUCTIONS with semi constructed kit complete \$5.00. Get particulars of other models and kits of cabin and stick planes from \$1.00 to \$3.50. Flights from 200 to 600 ft. 25c packing charge per plane. Write us for new catalogue and lowest prices on all parts and supplies. Propellers are our specialty. Special discount to members of Grant Aircraft Model League.

Write for Entry blank for national contest featuring Challenger Scout. Finals at New York Aviation Show next February, where your model will be exhibited and valuable prizes awarded.

**GRANT AIRCRAFT COMPANY, Keene, N. H.**

The Name "Grant" stands for integrity. "Grant" Models have flown for 20 years.

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#### MOSQUITO FLYER

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Send 5c in stamps for New Catalog showing latest record type commercial, indoor, and outdoor models. Balsa, rubber, parts, etc., at most reasonable prices. New 3 minute Indoor R. O. G. kit complete with plans postpaid 75c. Pioneer Models are real contest designs—you should have this catalog.  
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SEND FOR FREE PRICE LIST of MATERIALS and SUPPLIES for MODEL BUILDERS

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at Moderate Prices

South Haven Model Airplane Supply  
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Boys—send 65c. Big kit includes 3 famous SOLAR Detroit Model Airplane Fliers Club plans and complete instructions for building Biplane, Tractor and Pusher, plus all materials for making all 3—balsa blocks and sticks for blades, spars, ribs, fins; Japanese paper; rubber motor; wire; glue; banana oil—everything. Great fun to build; guaranteed to fly. Send money order TODAY (65c); no stamps.

COLLINS PLOW COMPANY, Dept. 110, Quincy, Ill.

# Simplex Air Model Co. AUBURN, MASS.

Send 5 cents for complete parts list. A 5 cent service charge is required on all orders amounting to less than \$1. A 5 cent packing charge is required on all shipments of wood or metal greater than 18" in length. Prices are subject to change without notice. All goods sent postpaid in the U. S. A. No stamps or C. O. D. orders accepted.

1/16" x 1/8" x 3'	Spruce 0.3c.	Balsa	
1/16" x 1" x 3'	"	"	.06c.
1/8" x 1/8" x 3'	"	.03	" .033
1/8" x 1/4" x 3'	"	.045	" .054
1/8" x 1/2" x 3'	"	.054	" .06
1/4" x 1" x 3'	"	"	.24
1" x 3" x 3'	"	"	.48
1" x 3" x 3 1/2'	"	"	.56
Reed 6' lengths, 1/16" diam.	.05c.		
Balsa discs 1/4" thick 2" diam.	.07c.	3/8" diam. .075c.	3/16" .10c.
Ambroid dope 1/4 pint .50c.		1/2 pint .08c.	4" .09c.
Ambroid Cement 2 oz. .33c.		1/2 pint .95c.	4 oz. .53c.
Bamboo paper 13" x 36" .12c.			
Rice paper 18" x 24" .09c.		24 3/4" x 33 1/2" .14c.	
Wood veneer		21" x 25" .06c.	
Flat rubber 50' of 1/4" .50c.		20" x 30" .22c.	
Piano wire 3' of No. 5 or No. 8 .04c.		50' of 3/16" .75c.	
28-30-32-34-steel wire per spool		3' of No. 11 or 15 .06c.	
1/16" copper washers			.10c.
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We can supply any size balsa that you need, also propellers, I beams, wing sections, bolts, nuts, screws, brads, aluminum, brass tubing, turnbuckles and hooks on model building.

## FLYING CLUB PINS . . . 35¢



Design Shown silver plate 35 cents each, \$3.50 doz. Gold plate or sterling silver 50 cents each, \$5.00 doz. Made with any 6 letters or less; 2 colors enamel.

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Myriads of unseen spirits hover about you. Read how they influence your life and the lives of others. The world's greatest authors write their most thrilling, chilling, gripping exciting stories of the unknown for GHOST STORIES Magazine. 35c at all news stands.

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Genuine U. S. Army Aeroplane Generator Propellers. brand new. Total length, 15 inches. Fine for clock mounting or decorative purposes \$2.00.

V. V. NATALISH

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"X-RAY-CURIO"

10c

3 for 25c BIG FUN

BOYS

You apparently see thru Clothes, Wood, Stone, any object. See Bones in flesh. FREE Pkg. radio picture film, takes pictures without camera. "You'll like 'em." 1 pkg. with each 25c order. Marvel Mfg. Co., Dept. 94 New Haven, Conn.

BOYS She Flies!

Takes Off Ground Zooms Up High 50c

Has wing spread 18" with main fuselage 14"; 7" carved wood propeller; 6 ply rubber motor. Bore to great heights. Completely assembled. Simply fasten wings and launch. Only 5th Junior model—11" wing spread 2" motor sides; 4 ply rubber motor 28c. Both models guaranteed to fly. Special: Pure Para rubber, 1/8" Bat 1 1/2c; 3/16" Bat 1c; 1/4" Bat 1c. Postage all orders to extra.

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a devilish racket. Then, glancing upward the crew saw three planes diving down on them—500 miles out at sea! Landplanes! They must be dreaming! No—here they were, screaming like tormented souls—there they go almost as vague as a fleet of "Flying Dutchmen".

Fascinated by the sight, the crew failed to see three more planes drop roaring from the clouds; but not for long, for here they were! It un-

doubtedly made them shiver. Section after section came piling down until all eighteen planes of the squadron had come and swooped back up into the safety of the clouds.

To the merchant crew it had been a sight to rival the imaginings of Jules Verne, but to the pilots of the planes, landed on their carrier miles away over the horizon, it had been merely an amusing incident in a hard day's work.

## Macfadden Aviation Advisory Board

(Continued from page 36)

Sage II Scout for fighting, two-seater, 100 h.p. Gnome engine  
Sage III training biplane, 75 h.p. Rolls engine  
Sage 4A seaplane and patrol, 150 h.p. Hispano engine  
Sage 4B and 4C seaplane training. 4A-200 Hispano-Suiza; 4B-200 Arab Sunbeam  
Short N2B float seaplane for bombing, Sunbeam-Coatlen Maori 275 h.p. engine  
Short "Shirl" torpedo-carrier, Rolls Eagle VIII, 400 h.p. engine

Now to a few letters:

Dear Sirs:

*I would be obliged to know if the camber of a wing is the streamline or shape. I also am interested to know whether a bead propeller bearing is better than a washer propeller bearing.*

Yours very truly,  
DONALD EXTER,  
1306 Fuller Ave.,  
Hollywood, California.

Answer:

The camber of a wing is the curve of the wing surface from the front or leading edge to the rear or trailing edge. Top camber refers to the top surface of the wing and bottom camber refers to the bottom surface of the wing.

With regard to the bead or washer propeller bearing, this is distinctly a matter of choice as they both function in about the same manner.

Gentlemen:

*I am building a scale model of a Ford plane. The instructions call for glue being applied only to the outline pieces on the top of the wing and not on the struts, while on the bottom glue is applied also to the struts in putting on the paper. Why?*

*Can cane, such as is used in furniture, be used on an airplane instead of reed for outline pieces on the wing and other such uses?*

*How is the covering put on a real plane? I have an idea it is put on with a tape something like adhesive, but what keeps it from slipping around and off?*

Truly yours,  
THEODORE HARVILCHUCK,  
330 Fourth St.,  
Olyphant, Pa.

Answer:

There was no particular reason for not instructing you to glue the struts on the top wing and if you so desire this can be done.

Cane as used in furniture can be used for outline work on models although it is usually found that reed or bamboo fits the purposes much better as they are as light and stronger than the cane.

The covering on a real plane is put on both by being sewn and glued into position.

Gentlemen:

*Will you please tell me why an airplane with the bottom wing smaller than the top will go faster.*

Yours truly,  
JOE SACKER,  
509 8th Ave.,  
Belmar, N. J.

Answer:

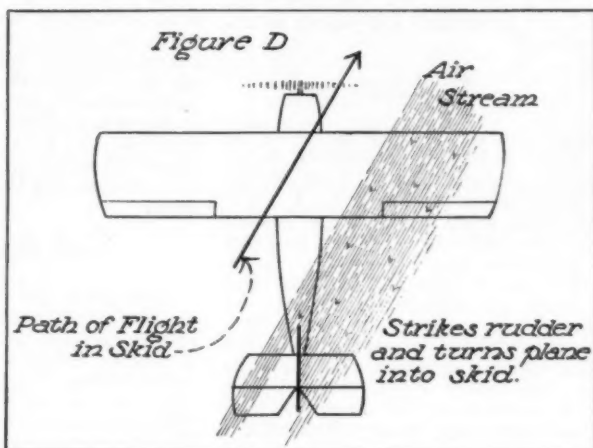
An airplane with a bottom wing smaller than the top one does not necessarily go faster than any other. The speed of an airplane depends entirely on its design and the motor with which it is equipped. On heavy transport planes, size and the weight they have to carry plus the fact that their wings are built with much more camber, in order to create greater lift, prevents them from being what might be called speed craft. On the other hand single-seater fighters, such as the Army Curtiss Hawk and the Vought Corsairs and other machines of that type, have very little camber to the wings and are much lighter in ratio to the power plant they carry. Therefore, they naturally are much faster.

Those who wish to purchase parts for the construction of models, or blueprints, will be furnished with the name and address of the company which stocks them, upon request for this information from the reader. Address the Editor, MODEL AIRPLANE NEWS, Macfadden Publications, Inc., 1926 Broadway, New York City.

## A Course in Airplane Designing

(Continued from page 35)

Diagram shows how an increase in rudder and fin area corrects a tendency to skid



we shall deal with later, but they are not of enough importance to the modellist to introduce them at this point.

The second requisite for model stability is that the wings fly level. If one drops lower than the other the ship will slip. The established method of holding the wings level is by pendulum stability. This is shown in Figure B. The center of gravity is below the center of lift. When the ship swings to one side the weight is swung out from beneath its center of support, and gravity swings it back. This action is precisely the same as that of the pendulum.

### Wing Dihedral

Another method of keeping the wings level is the use of wing dihedral. This is illustrated in Figure C. The wings are made to form a shallow V, as shown. When the ship tips up on one wing, the wing that is tipped up is closer to the center of gravity in a vertical line, and its lift has less effect than the lift of the low wing. The low wing increases its distance from the center of gravity, and the ship is swung level.

The third way that a plane must be stable is really two ways. That is, it must neither skid, nor turn without banking. Of all the problems of stability that confront the model builder, this is perhaps the

easiest to solve. An increase of rudder and fin area will always correct the ship that tends to skid, or to turn flatly. As shown in Figure D, the air strikes the rudder and fin from the side when the ship skids. This sets up a force that turns the ship in the direction of the skid, which, of course, eliminates the skid. Sweep back of the wings is also employed for this purpose. We will deal with that in a later article.

Remember, I have barely touched on the subject of stability. Volumes can be written on it, but I have tried to make the general topic a little clearer for the model-airplane builder, so that he may apply the principles to his ships, and get better results.

### Questionnaire

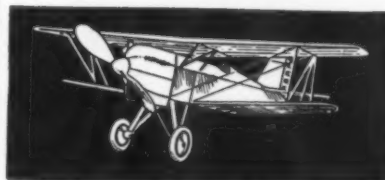
Now see what you can do with these questions.

1. In what three ways must a model airplane be stable?
2. What is the center line of thrust?
3. Why should the prop shaft lie in the line of flight?
4. Explain pendulum stability.
5. A ship takes off well, but as soon as it is off the ground it turns without banking, skidding sidewise. What can be done to remedy this condition?

Continue on the road to successful model building by watching for the designing course in the February and subsequent issues of MODEL AIRPLANE NEWS.

This is something you cannot afford to miss.

## TWO FOOT Curtiss Hawk Biplane



The Two Foot Curtiss Hawk is a flying model of the fast, maneuverable Army pursuit plane. Our plan is drawn to scale, and flights of 300 feet have been obtained with this model.

The construction is balsa wood. Only the lightest parts are used.

The construction set contains all necessary parts, including cut out body sides, celluloid wheels, two colors of dope for coloring the model, bent wire parts, etc. All necessary parts on the plan are drawn full size, and the plan and instructions are very complete.

Complete Construction Set.....\$2.50



### Two Foot Junkers Low Wing Monoplane

This model has flown over 500 feet. It is a simple model to build, compared with others, as the body sides, ribs, wing tips, wire parts are formed, also celluloid wheels.

This is a better flying model than the Curtiss Hawk for distance, but cannot compare in looks.

Complete Construction Set.....\$2.50



The Baby Tractor is the simplest model to make, and as it contains only just enough parts for flying, will outfly many a larger and more costly model. This model has been flown out of sight many times, under the right conditions, and when fairly well made will average about thirty to sixty seconds duration.

Complete Construction Set.....\$.50  
Catalog \$.05

Hawthorne Model Aero. Co.

Hawthorne, N. J.

## Junkers "Bremen" 40" Wing Spread



Construction outfit for this beautiful model

SENT POSTPAID \$8.50

### Graf Zeppelin

Construction Set

Sent Postpaid \$7.50

### Bellanca

Full size Blue Print  
with Instructions 75c

We supply Stores, Schools, Clubs and Military Academies SINCE 1909. Our 56 page catalogue contains 26 flying and exhibition models, and a most complete line of parts and supplies for model airplane BUILDERS. All Parts for building Compressed Air Motors.

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399 Bridge St. Brooklyn, N. Y.

## CURTISS ARMY HAWK FLYING SCALE MODEL

KIT COMPLETE WITH BLUE-PRINTS \$2.50.

Send 2c postage stamp for complete price list.  
A.A.C. MODEL AIRCRAFTERS, 340 East 188th Street, New York City.

Get the real low down on

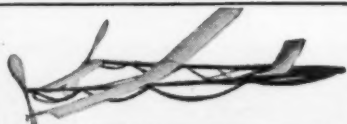
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Here's a sample—1 skein (approximately 210 ft.)  $\frac{1}{4}$ " pure para rubber—\$1.00. Send stamped envelope bearing your correct address for free price list.

COUNTRY CLUB AERO SUPPLY  
COMPANY

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"Where your dollar has more cents"



**37 INCH OUTDOOR TWINPUSHER.** This plane will fly from 2 to 7 minutes; holds local record of 9 minutes 40 seconds. It is an exceptionally good flyer in any weather. Kit contains full size blue prints, ready cut balsa finished ribs, wire parts formed and all necessary materials. COMPLETE KIT. \$2.25

COMPLETE KIT WITH CARVED

PROPELLERS.....\$2.25

**36 INCH OUTDOOR TRACTOR.** A very

simple model for the beginner. Kit contains

full size blue prints, instructions,  $10\frac{1}{4}$  in.

carved propeller, ready cut balsa, metal fitting

formed, and other necessary materials.

SPECIAL THIS MONTH ONLY.....\$1.50

**CURTISS ROBIN** with Challenger or O.X.5

engine. A 21 inch flying model, rubber

powered, weight  $\frac{1}{2}$  oz. Complete kit...\$3.50

**COLOR JAPANESE TISSUE.** Adds no

weight. Green, Red, Orange or Yellow.

Made especially for Scale models. 20x15 inch

sheets. This assortment.....\$ .25

**BLACK PARA RUBBER.** 1-8x1-32 inch.

Guaranteed fresh, pure stock. PER SKEIN

90c. ONE POUND LOTS, \$2.30.

One of our many models

Send 5c at Once for Our Catalog

EHRHARDT'S MODEL AIRCRAFT  
SUPPLY COMPANY

7020 Wise Ave. St. Louis, Mo.

## How to Build a J. D. Tractor

(Continued from page 37)

center place ribs  $\frac{3}{4}$ " on each side, and the other two  $\frac{7}{8}$ " from these. Ambroid.

### Rudder

Cut two strips  $\frac{1}{16}$ " x  $\frac{11}{16}$ " x 2  $\frac{1}{4}$ " balsa. Make them in a perfect triangle, the base being  $\frac{1}{5}$ " wide. Cut a strip  $\frac{1}{5}$ " long and place that at the bottom and now ambroid all joints and put a weight on this.

Use No. 6 wire for fittings. Get a pair of round-nose pliers and shape out your wing clips. The front wing clip is smaller than the rear and the rear has a longer slide for the motor stick. This longer slide determines the angle of incidence for your wing. Make these as carefully as you can from the drawings.

After letting the wings dry for one-half hour you are ready to cover them. Use Japanese tissue paper as this is light and durable. Cut out in half-pieces for each wing. Leave  $\frac{1}{8}$ " overlapping to tuck it under. Use banana oil for covering. Cover top of the elevator and one side of rudder the same way in one-piece pattern.

### Assembling the Wings

Now cut four strips  $\frac{1}{16}$ " x  $\frac{1}{16}$ " x  $\frac{13}{4}$ " balsa. Get the lower wing and place a weight in the center of it. Do not use too heavy a weight for fear of breaking the rib. Now the wing is upright and the dihedral is  $1\frac{1}{2}$ " on each side. Next take the balsa pieces  $\frac{1}{3}$ " long and ambroid them on each second rib of the wing on an angle of  $\frac{3}{4}$ " at leading and trailing edges of the wing. Hold it there (do this one at a time) until it can support itself in that position. Now take the top wing and

place it above the lower one. If this is done the gap if measured will be 2" in the middle of the wing and the stagger  $1\frac{1}{4}$ ". When the struts are on this slant, they will meet the second rib 2" from the tips of the upper wing. Now put a drop of ambroid on the tops of the struts and place the upper wing on its respective struts. Let this dry for one-half hour.

### Tail Assembly

Now take the rudder after it is covered and ambroid it on top of the elevator and let it stand for a while. Make sure it is vertical. After letting it dry, ambroid the tail assembly on the top of the fuselage. This will leave a space of 1" between the motor hook and leading edge of the elevator. Put this away to dry and make sure the elevator is horizontally straight.

To make a landing-gear use balsa strips  $\frac{1}{4}$ " x  $\frac{1}{8}$ " x 3" (before streamlining). Now take these strips and streamline as much as possible. Get a strip of balsa  $\frac{1}{16}$ " x  $\frac{1}{16}$ " x 2" and fit this in between the landing struts until the tread of your landing-gear is  $3\frac{5}{8}$ " wide, thus making the 2" strip  $\frac{1}{8}$ " above the widest point of the tread. Ambroid this strip in and let it dry.

Now for the wheels. Get two pieces  $1\frac{1}{2}$ " x  $1\frac{1}{2}$ " x  $\frac{1}{16}$ " balsa. Draw a circle with a 1" diameter and cut off the parts outside the circle. Do this to both of them. Now find the center of the wheels and make a hole in both of them to fit in No. 6 wire. Lay the wheels aside. From a piece of No. 6 wire make a small wing clip. Take your landing-gear struts, which have been dried, and ambroid the clip between the struts at the top of the struts. Now let this dry.

Get two pieces of No. 6 wire, each  $\frac{1}{2}$ " long. Punch a hole in the bot-

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF MODEL AIRPLANE NEWS, published monthly at Dunellen, N. J., for October 1, 1929.

State of New York  
County of New York

Before me, a Notary Public in and for the State and County aforesaid, personally appeared Edwin T. Hamilton who, having been duly sworn according to law, deposes and says that he is the editor of the MODEL AIRPLANE NEWS, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Model Airplane News Publishing Co., 1926 Broadway, New York City; Editor, Edwin T. Hamilton, 1320 Riverside Drive, New York City; Managing Editor, Edith L. Becker, 1316 Riverside Drive, New York City. Business Managers, none.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent. or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Model Airplane News Publishing Co., 1926 Broadway, New York City. Stockholder: Macfadden Publications, Inc., 1926 Broadway, New York City. Stockholders in Macfadden Publications, Inc., Bernarr Macfadden, Englewood, N. J.; O. J. Elder, 276 Harrison St., East Orange, N. J.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent, or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; and that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is.....(This information is required from daily publications only.)

Sworn to and subscribed before me this 27th day of September, 1929. (Signed) EDWIN T. HAMILTON, Editor  
(Seal) WESLEY F. PAPE,  
(My commission expires March 30, 1931)

tom of the strut 1/8" from the bottom and insert the wire. Slip on the wheel on the outer side of the strut. Put a drop of ambroid at the end and then with the round nose pliers turn up the ends of the wire in the inner part of the strut and ambroid to strut. Do this on the other wheel also. Let this dry for fifteen or twenty minutes and the landing-gear is complete.

### Propeller

The propeller is carved from a block of balsa 1" x 1/2" x 7". Make the "prop" to turn counter-clockwise. Drill a hole in the center and insert the propeller shaft and ambroid. Then see if it is balanced. If one side is heavier, sandpaper that side until the propeller is equally balanced.

Now take the wing clips. Place the small one in front and the big one in the rear. Let these dry until they are tight. Now you are ready to fly your plane. Slip your wings on the fuselage. Get your rubber motor, which is 1/8" flat and 2' long.

Divide this so your motor will be a loop of one foot. Slip this into the motor hook and be sure you have your S hook at the end which goes to the motor hook. Now slip it through the can. Get your two washers. Slip these on the shaft of the "prop" and insert the shaft through the thrust bearing.

Now attach the rubber and wind it up thirty or fifty times and launch. If outdoors launch into the wind. If it should dive, set your wings forward.

After you have found your best gliding angle, wind up the motor until you feel that it is tight enough and has all of its power. Hold the propeller with your left hand and with your right hand hold the plane at about the middle of the fuselage. Now give it a slight upward push and let it go.

## How to Construct a Bob Sled

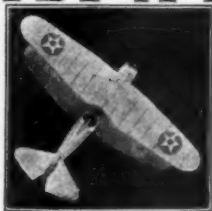
(Continued from page 31)

left out of piece "B" in earlier operations. Be sure to have the smooth side of the bolt on the top side of the sled. Slide the long bolt on the back into place. Bore holes in the back runners for the rope shown in the drawing and in the reach board for the eye bolts for the ends of the rope.

A number of changes may be made in this sled such as a steering wheel in place of rope, and so forth.

All in all, I do not know anything that can be used in sections where there is plenty of snow from which more pleasure can be had than a bob-sled—both in the making and in using. (See plan on page 32)

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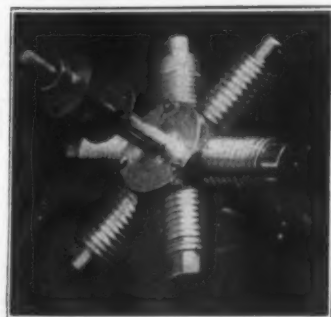
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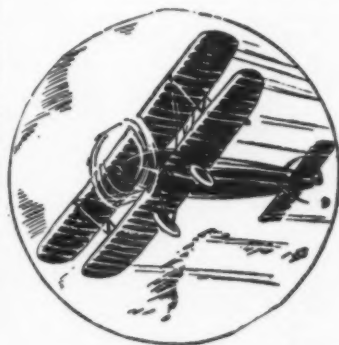
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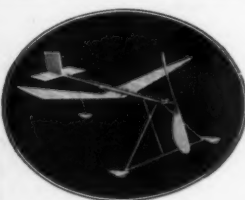


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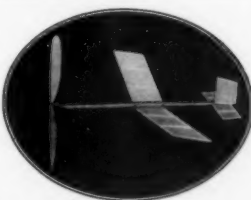


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